

Kekaha Kai State Park

North Kona, Island of Hawai‘i

Park Development Report and Draft Environmental Impact Statement



Applicant:

Department of Land and Natural Resources
Division of State Parks
State of Hawaii

Prepared By:

Group 70 International, Inc.
Architecture • Planning • Interior Design • Environmental Services
Honolulu, HI

December 2002

Kekaha Kai State Park

North Kona, Island of Hawai'i

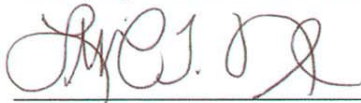
TMKs:
7-2-05: 02,03,07
7-3-43: por. 1
7-2-04: 03, 17, 19

Park Development Report and Draft Environmental Impact Statement

This environmental document is prepared pursuant to Chapter 200 of Title 11, Administrative Rules, Department of Health, "Environmental Impact Statement Rules."

Proposing Agency:
Department of Land and Natural Resources
Division of State Parks
State of Hawaii

The preparation of this document were under my direction.



for Linnel T. Nishioka
Deputy Director for

Gilbert Coloma-Agaran, Director
Department of Land and Natural Resources

12/24/02

Date

Accepting Authority:
Governor
State of Hawaii

Prepared By:
Group 70 International, Inc.
Architecture • Planning • Interior Design • Environmental Services
925 Bethel Street, 5th Floor
Honolulu, HI 96813

December 2002

Table of Contents

Section	Page
Table of Contents	i
Technical Appendices	iii
List of Figures	iv
List of Tables.....	v

PARK DEVELOPMENT REPORT

1.0 Introduction

1.1 Introduction	1-1
1.2 Park Sections	1-10
1.3 The Role of the Community	1-18
1.4 Planning Assumptions	1-18
1.5 Park Development Plan Summary.....	1-19

2.0 Natural Resources

2.1 Geological History.....	2-1
2.2 Marine Environment and Anchialine Ponds	2-3
2.3 Plant Communities	2-5
2.4 Wildlife.....	2-7
2.5 Scenic Resources	2-8
2.6 Resources Valued For Preservation, Interpretation & Recreation	2-8
2.7 Natural Resource Interpretive Themes	2-9

3.0 Cultural Resources

3.1 Cultural History of Kekaha.....	3-1
3.2 Pre-Contact Period Archaeological Sites.....	3-1
3.3 Post Contact Sites	3-5
3.4 Underwater Archaeological Sites (Shipwreck, <i>ko 'a</i>)	3-5
3.5 Significant Resources Evaluation.....	3-6
3.6 Cultural Interpretive Themes.....	3-9

4.0 Recreational and Educational Opportunities

4.1 Park Users/Audience and Resources	4-1
4.2 Mahai'ula/Kaulana	4-3
4.3 Awake'e.....	4-4
4.4 Manini'owali / Kūki'o.....	4-7

5.0 Planning Considerations

5.1 State Park Goals and Guiding Principles.....	5-1
5.2 Development Plan Process	5-1
5.3 Infrastructure and Facilities	5-1
5.4 Hazards.....	5-5

KEKAHA KAI STATE PARK

• Park Development Report and Draft Environmental Impact Statement •

5.5	Constraints	5-9
5.6	ADA Guidelines and Compliance	5-9
5.7	Regulatory Requirements	5-10

6.0 Development Plan for the Mahai'ula Section

6.1	Mahai'ula / Kaulana Section	6-5
6.2	Awake'e.....	6-18
6.3	Manini'owali / Kūki'o.....	6-20
6.4	Development Phasing.....	6-23
6.5	Park Development Cost.....	6-23

7.0 Park Management

7.1	Park Operations	7-1
7.2	Park Operating Costs.....	7-6
7.3	Access and Vehicular Traffic	7-6
7.4	Trail Management Plan	7-6
7.5	Cultural Resource Management Plan	7-8
7.6	Endangered Species Management Plan.....	7-8
7.7	Commercial Uses.....	7-8

ENVIRONMENTAL IMPACT STATEMENT

8.0 Summary8-1

8.1	Information/Background	8-1
8.2	Project Information Summary	8-1
8.3	Project Site	8-2
8.4	Proposed Actions.....	8-2
8.5	Reasons for Preparing This Environmental Impact Statement	8-2
8.6	Significant Beneficial and Adverse Impacts.....	8-3
8.7	Proposed Mitigative Measures	8-3
8.8	Alternatives	8-3
8.9	Unresolved Issues	8-4
8.10	Compatibility With Land Use Policies and Plans.....	8-4
8.11	Required Approvals and Permits	8-4

9.0 Environmental Setting.....9-1

9.1	Overview	9-1
9.2	Terrestrial Conditions.....	9-1
9.3	Man-Made Environment	9-6
9.4	Natural Hazards	9-7
9.5	Near-shore Water Conditions	9-8
9.6	Infrastructure	9-11
9.7	Socio-Economic Conditions	9-14
9.8	Public and Social Services and Facilities	9-15

KEKAHA KAI STATE PARK

• Park Development Report and Draft Environmental Impact Statement •

10.0 Cultural Resources.....	10-1
10.1 Archaeological Studies	10-1
10.2 Mahai'ula and Kaulana.....	10-1
10.3 Archaeological Inventory Survey – Awake'e, Manini'ōwali / Kūki'o 2.....	10-3
10.4 Oral History	10-9
11.0 Relationship To Land Use Plans, Policies and Controls	11-1
11.1 Overview	11-1
11.2 Hawai'i State Plan	11-2
11.3 State Functional Plans	11-5
11.4 County of Hawai'i General Plan	11-7
11.5 Hawai'i Coastal Zone Management Program.....	11-9
11.6 Special Management Area Rules and Regulation of the County of Hawai'i.....	11-11
12.0 PROBABLE IMPACTS AND MITIGATIVE MEASURES.....	12-1
12.1 Potential Short-Term Impacts.....	12-1
12.2 Potential Long-Term Impacts.....	12-5
12.3 Summary of Probable Impacts	12-9
13.0 ALTERNATIVES TO THE PROPOSED ACTIONS	13-1
13.1 No-Action Alternative.....	13-1
13.2 High, Medium and Low-Intensity Alternatives.....	13-1
14.0 SUMMARY OF UNRESOLVED ISSUES.....	14-1
14.1 Public Trails on Private Lands.....	14-1
14.2 Degree of Road Improvement to Mahai'ula	14-1
14.3 State Funding Resources	14-1
14.4 Other Funding Sources	14-1
14.5 Potential Impacts to Cultural Resources on Private Lands (Pu'u Ali'i Dunes and Kolomikimiki).....	14-1
15.0 REQUIRED APPROVALS AND PERMITS	15-1
16.0 REFERENCES.....	16-1
17.0 AGENCIES AND PARTIES CONSULTED	17-1
17.1 Comment and Response Letters to EIS Preparation Notice	17-1

TECHNICAL APPENDICES

Appendix A:	Glossary of Terms Used
Appendix B:	Utilities
Appendix C:	Day Use Moorings
Appendix D:	Wildlife Resources
Appendix E:	Botanical Study
Appendix F:	Traffic Impact Assessment – 1996
Appendix G:	Traffic Impact Analysis – Manini'ōwali
Appendix H:	Ala Kahakai National Trail Study – Record of Decision
Appendix I:	Water Quality Monitoring Report – Manini'ōwali
Appendix J:	Kekaha Kai State Park Community and Task Force Meetings 1994-2002
Appendix K:	Archaeological Reconnaissance Survey – Mahai'ula
Appendix L:	Kekaha Wai 'Ole o Na Kona
Appendix M:	Archaeology (Tom Dye)

KEKAHA KAI STATE PARK

• Park Development Report and Draft Environmental Impact Statement •

LIST OF FIGURES

Figure	Title	Page
1-1	Vicinity Map.....	1-2
1-2	Location Map.....	1-3
1-3	Conceptual Master Plan.....	1-4
1-4	Regional Recreational Resources	1-6
1-5	Coastline	1-9
1-6	Mahai'ula / Kaulana	1-11
1-7	Existing Uses - Mahai'ula.....	1-12
1-8	Land Ownership.....	1-13
1-9	Awake'e.....	1-14
1-10	Pu'u Kuili (Awake'e)	1-15
1-11	Manini'owali	1-17
2-1	Coastal Kīpuka.....	2-2
2-2	Ponds	2-4
2-3	Vegetation Types	2-6
3-1	Historic and Cultural Resources	3-2
3-2	North Kona Trails	3-3
4-1	Existing Recreational Resources.....	4-2
4-2	Awake'e Camping	4-6
5-1	Magoon Estate sketch map	5-3
5-2	Ka'elehuluhulu sketch map	5-4
5-3	Flood Zones	5-6
5-4	Keāhole Airport AICUZ Contours.....	5-8
5-5	County Zoning and General Plan.....	5-11
5-6	State Land Use Districts and Special Management Areas	5-12
6-1	Development Plan Overview	6-2
6-2	Development Plan – Mahai'ula	6-6
6-3	Canoe Hālau concept	6-14
6-4	Development Plan - Awake'e	6-19
6-5	Development Plan – Manini'owali	6-21
7-1	Makalawena.....	7-9
9-1	Soils	9-3
9-2	Vegetation.....	9-5
9-3	Roadways.....	9-12
10-1	Kekaha Inventory Survey Areas	10-5
10-2	Archaeological Figures	10-6
11-1	State Land Use Districts & SMA.....	11-1
11-2	County Zoning & General Plan	11-2
12-1	Proposed Intersection Configuration	12-8

KEKAHA KAI STATE PARK

• Park Development Report and Draft Environmental Impact Statement •

LIST OF TABLES

Table	Title	Page
6-1	Summary Cost Estimates – Kekaha State Park.....	6-24
6-2	Mahai’ula Cost Estimates	6-25
6-3	Manini’ōwali Cost Estimates	6-26
6-4	Awake’e Cost Estimates	6-27
10-1	Formal Feature Type, Ahupua’a of Mahai’ula and Kaulana	10-2
15-1	Required Approvals and Permits Kekaha Kai State Park	15-1

PARK DEVELOPMENT REPORT

Section 1.0

PDR-Introduction

1.0 INTRODUCTION

This report consists of the Kekaha Kai State Park Development Report (PDR) and the Environmental Impact Statement (EIS) for these park improvements. The Park Development Report details the improvements provided in the Kekaha Kai State Park Conceptual Plan which was accepted by the State Board of Land and Natural Resources in 1998. The PDR consists of seven chapters, outlining implementation strategies of the Conceptual Plan, resource management plans and cost estimates. The EIS relating to these planned improvements are provided in subsequent chapters.

1.1 INTRODUCTION

The Kekaha Kai State Park is a large (1642 acre) park along the Kona Coast of the Island of Hawai'i (Figures 1-1 and 1-2). Kekaha Kai State Park, formerly called the Kona Coast State Park, will be developed in accordance with its companion document the Kekaha Kai State Park Conceptual Master Plan (June 1998) (Figure 1-3).

This park is envisioned as one jewel in a string of parks along the coast from Kawaihae to Kailua-Kona. It is predominantly a wilderness park that will preserve the natural landscape of this Kona shoreline with park development to provide increased recreational opportunities, support the development of cultural and educational programs, and preserve and enhance valuable natural and cultural resources. To this end infrastructure and facility development will be relatively small and dispersed.

For park planning purposes the site has been divided into three sections along *ahupua'a* boundaries: Mahai'ula/Kaulana, Awake'e and Manini'owali / Kūki'o. Different levels of use are proposed for each of these sections, which will provide slightly different park experiences.

Each section will have a *mauka-makai* access/trail and be crossed by the lateral coastal trail system known as the Ala Kahakai. Each section will be managed according to the sustainability of existing resources and the park concept for that section. This development plan will be used to guide the development of facilities in each section of the park.

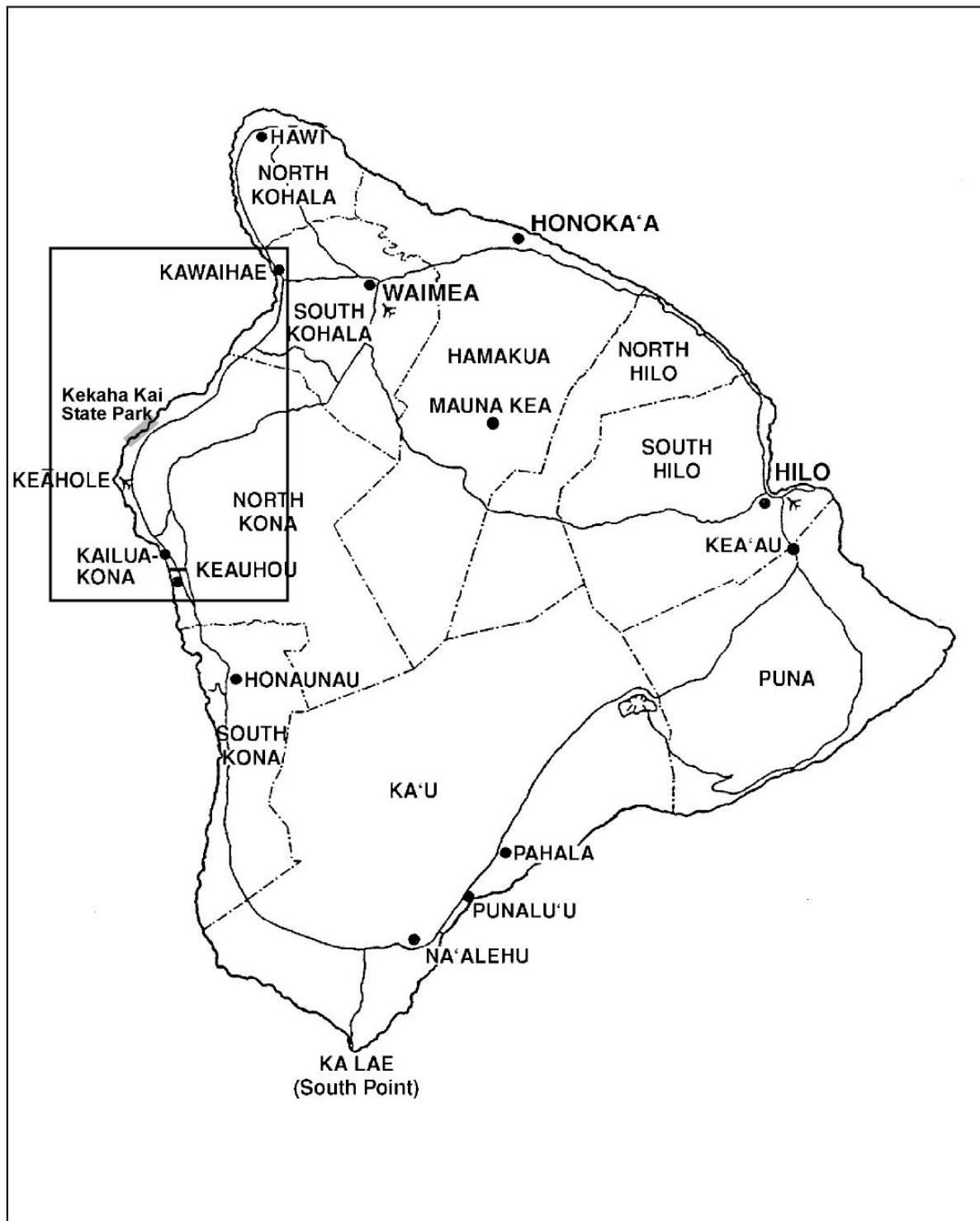
Mahai'ula is proposed for a higher level of use than the other two sections. Manini'owali is projected for a moderate level of use and Awake'e is proposed for the lowest intensity of use. This decision is largely due to existing conditions, the size and resilience of the resources and the level of use pressure for the respective sections.

Each section will have a cluster of park visitor facilities comparable to a settlement in the old *ahupua'a* system. These clusters will have different levels of amenities and maintenance depending on the park plan and anticipated levels of use. Clusters will be located within vegetated areas along the shoreline with access to the ocean.

The Kona community, represented at public meetings and through a citizen's advisory task force (a list of members is provided as Appendix J) provided public input into the plan and focused on the Mahai'ula and Manini'owali sections of the park. The general consensus was to plan the entire park for low levels of use and consider more intensive uses in future phases when facilities, manpower, and management systems are in place to preserve and sustain the resources in the face of increasing demand. It is important to understand that levels of use are relative terms and not pre-established standards. They are related to current levels of use and are relative between different sections within the park. Notes from the public meetings and task force recommendations are included as Appendix J.

KEKAHA KAI STATE PARK

• Park Development Report •



Not to scale



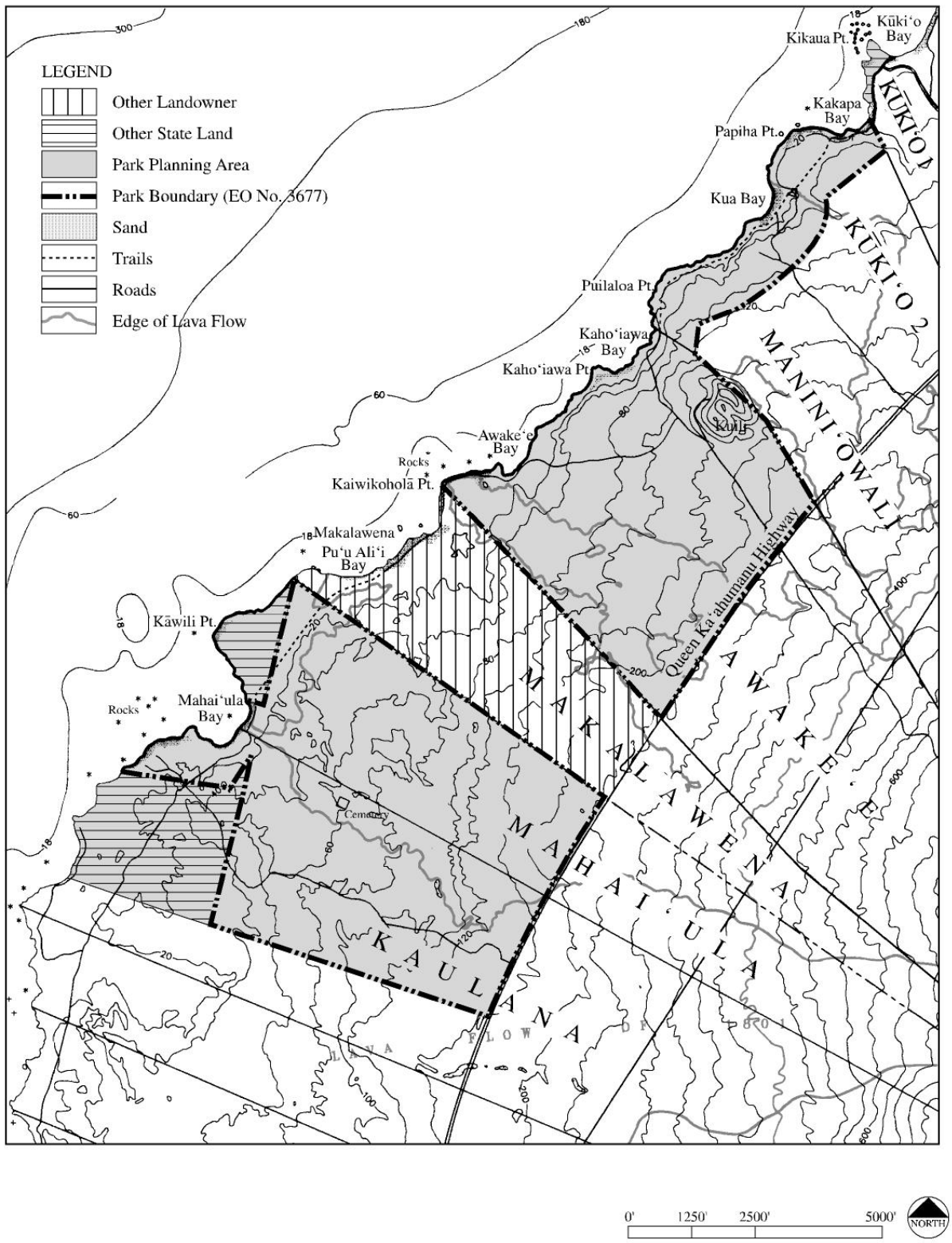
Kekaha Kai State Park

Vicinity Map

Figure 1-1

KEKAHA KAI STATE PARK

• Park Development Report •



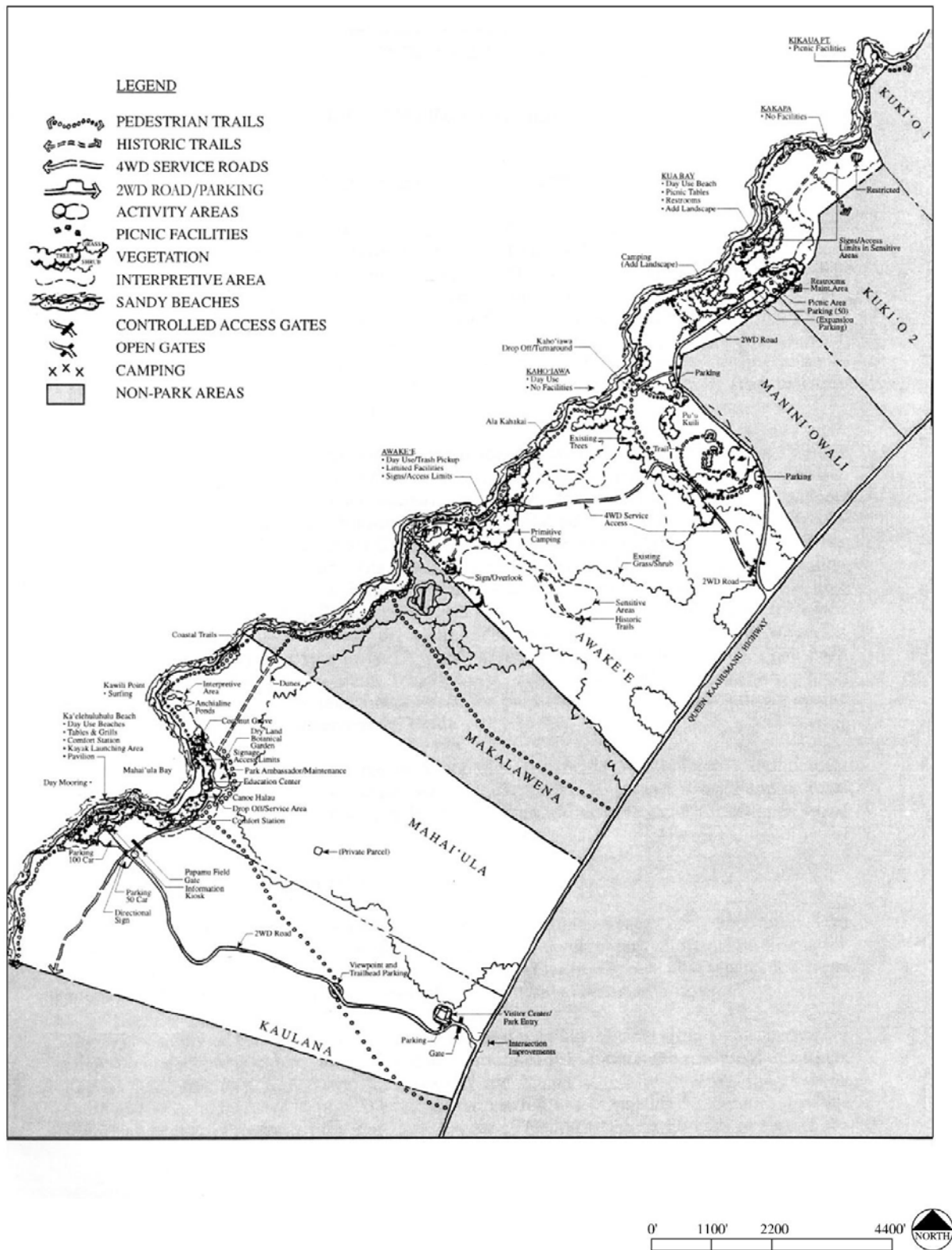
Kekaha Kai State Park

Location Map

Figure 1-2

KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

Conceptual Master Plan

Figure 1-3

1.1.1 Relationship to the Region

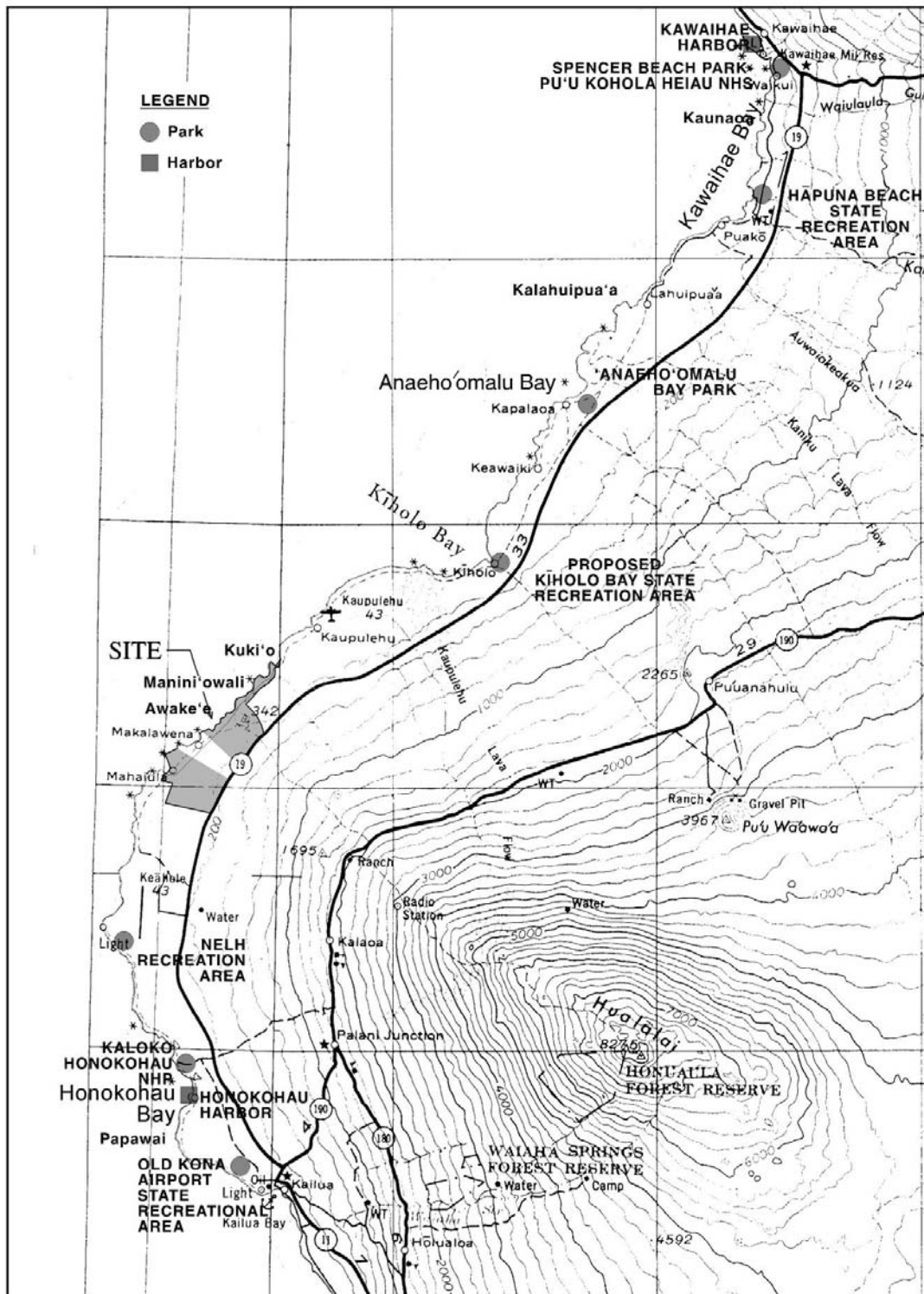
The Kekaha Kai State Park is one of the State's coastal parks in North Kona. The park setting and facilities will enhance the community's lifestyle and maintain resources for the enjoyment of future generations. Located on the edge of the growing urban communities of Kailua-Kona, it provides a welcome, desirable open space. Its proximity to the largest urban concentration in West Hawai'i makes it accessible to a large residential population and Kona resort communities placing an increasing burden on the park to accommodate the growing pressures for more recreational opportunities.

Within the regional context, Kekaha Kai State Park is one of two planned "wilderness" parks along the Kona Coast. These wilderness parks emphasize the sustainability of natural and cultural resources in balance with public use. Modern amenities, facilities and conveniences will be limited. Wide-open natural spaces will be preserved and enhanced as much as possible. Recreational uses will be more passive, such as hiking, camping, and beachgoing, rather than active recreation associated with improved facilities. Access to many areas will remain "unimproved" or "managed for low impact". Landscape improvements will be kept at a minimal level. This is a place for retreat; a place for meditation; a place for renewal of the spirit and soul. This is a place to touch the earth, feel the sea and breathe the air. This is a park to re-establish our connection to the natural world.

Kekaha Kai is one of several parks along the Kona Coast connected by the Ala Kahakai trail, a National Historic Trail. The trail's first increment is the 35-mile segment from Kawaihae to Kailua-Kona. Major parks in this network include: Pu'u Koholā Heiau National Historic Site, Spencer Beach County Park, Hāpuna Beach State Recreation Area, 'Anaeho'omalū Park, Kīholo State Park Reserve, Kekaha Kai State Park, Natural Energy Laboratory - Hawai'i (NELH) Park, Kaloko-Honokōhau National Historical Park and Old Kona Airport State Recreation Area (Figure 1-4).

KEKAHA KAI STATE PARK

• Park Development Report •



NOT TO SCALE

Kekaha Kai State Park

Regional Recreational Resources

Figure 1-4

1.1.2 *Ahupua'a* Concept

Kekaha Kai State Park crosses six traditional *ahupua'a* boundaries in North Kona; they are Kaulana, Mahai'ula, Makalawena, Awake'e, Manini'owali and Kūki'o. An *ahupua'a* is a traditional land division that became part of the old tax and land management system of the Hawaiian kingdom. The *ahupua'a* was managed as an integrated unit following principles of sharing and sustainability of resources. Each *ahupua'a* consisted of a land section stretching from the mountains to the coast and its adjacent waters with a diversity of resources. Each was managed by a *konohiki* (a kind of land manager) for a chief. The settlement patterns within each *ahupua'a* were based on available resources but typically involved coastal and upland uses that complemented each other. Each *ahupua'a* was independent in its management and some were wealthier than others in resources. Sharing between residents of different *ahupua'a* was commonplace.

Because of the harsh, dry, volcanic landscape on the Kona Coast, the *ahupua'a* concept resulted in small, dispersed, coastal settlements which occurred where there was fresh water and a canoe landing. The wealth of the region was based on its ocean resources and fertile upland areas rather than its coastal plains. A broad uninhabited or sparsely inhabited open area separated the coastal area from the cultivated and forested uplands which were located in the precipitation zone. *Mauka-makai* trails connected the coast to the uplands and residents of both areas traded and shared their respective goods. Each *ahupua'a* had its own coastal settlement except in a few places where site conditions were inhospitable. The sizes of the coastal settlements varied with the geography and available resources. Kekaha Kai State Park contains the coastal settlements of the *ahupua'a* of Kaulana, Mahai'ula, Awake'e, Manini'owali and Kūki'o. (A glossary of Hawaiian terms used in this report is included as Appendix A.)

1.1.3 "Wilderness" Park Concept

Consistent with the wilderness theme and the concepts of sustainable resources, the overall park scheme begins with a baseline of low intensity use. Recognizing that there is no set definition of low levels of use, the definition will be based on an evaluation of current conditions, resource sustainability and the policy focus for that specific section of the park. Increases in use will be coordinated with a resource monitoring program and levels of maintenance and protection provided for the resources.

Some have questioned the use of the term "wilderness" in relation to Kekaha Kai and there is some validity to it. The landscape has been impacted by human activity. Vegetation is mainly introduced *kiawe*, *koa haole* and fountain grass. Queen Ka'ahumanu Highway forms the eastern boundary of the park and it is the largest and most heavily traveled corridor in West Hawaii. Kona International Airport at Keāhole forms the southern boundary and jets fly frequently over the southern (Kaulana/Mahai'ula) portion of the Park. Urban development is also expanding from its core in Kailua-Kona along the mauka slopes of Hualālai towards the Park. The most recent proposal is a raceway park just mauka of the Airport approaching the entrance to the Park. The Hualālai and Kūki'o residential developments with golf are under construction along the northern park boundary at Manini'owali section. Within such a context it is difficult to call this a wilderness site. However, the term is more symbolic than descriptive. It is essentially an open space with intact landforms and vegetation patterns and is relatively free of built structures. It is clearly not a place distant from urban development. Part of its attraction and value is its proximity to urban areas. However, it is a place to re-connect to nature: the sea, sand, open skies, winds, lava and plant forms. The large park size offers opportunities to feel "separate" from the neighboring urban developments.

Natural landforms, flora and fauna and open spaces are the heart of wilderness experiences. The park is blessed with many such resources and these features will be highlighted. Sandy beaches at Manini'owali and Mahai'ula along with intervening rocky coastlines create a variety of coastal environments. Pu'u Kuili stands as a wonderful resource; a sentinel and landmark over the coast. Dark lava flows and coastal pockets of dryland and strand vegetation create a variety that one would not expect in such a landscape. This is projected to be enhanced with a botanical garden and a gradual restoration of endemic and

KEKAHA KAI STATE PARK

• Park Development Report •

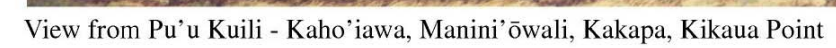
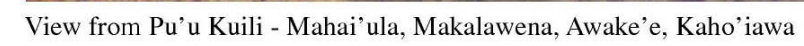
Polynesian introduced flora. Pond areas at Manini'ōwali, Awake'e, Mahai'ula and Ka'elehuluhulu will be restored or enhanced through proper maintenance. Figure 1-5 illustrates the coastal beauty of the Park. The pre-contact cultural landscape is interwoven with the natural landscape. These resources will be highlighted through interpretive programs and a cultural resource management plan.

Paved or graded areas such as roads and parking areas will be buffered with appropriate xeriscape. Graded roads and paved areas will be minimized except to accommodate projected usage, ADA requirements and maintenance and emergency requirements.

Comfort stations and new park structures will be clustered to minimize the visual impact. Facility designs will seek to blend the structures into the landscape with appropriate scales, form, color and materials.

Camping can enhance the wilderness experience. The major limitations for camping sites are the sustainable capacity of the resource, security, and maintenance. The Kekaha Kai State Park will provide camping experiences at assigned locations to accommodate backpackers and other campers. The level and number of camp sites will be contingent on available resources and park personnel. Camping facilities will range from "primitive" unimproved sites where the only facilities are portable toilets and trash receptacles to improved sites with water and comfort stations.

• Park Development Report •



1.1.4 Interpretation

The park will have a strong educational orientation through the development of an interpretive program. The program will emphasize natural science (especially geology, ecology and marine biology), culture and history and include interactive hands on experiences. The park is an ideal place to interpret the themes of island geology and volcanoes, the special character of arid leeward climates, cultural adaptation to the leeward environment, and the special nature of Hawai'i's marine life and ocean ecology, especially anchialine pond complexes.

Management practices in the current climate of environmental awareness can be presented with an appreciation of the wisdom of the old *ahupua'a* management system. Protection of endangered species in both the terrestrial and marine environments can emphasize the flow, balance and interrelationships of natural processes. Aquatic programs and ecological programs will focus on the lessons of modern science and their parallels in native cultural practices. Mullet release programs, fishing and canoeing techniques could all be part of a curriculum for programs in the park. The fishing heritage and richness of marine resources could be a focus for additional programs. Dry land gardening and traditional agricultural practices could be taught.

Technical experts and respected *kūpuna* should become part of the '*ohana* associated with the park. The park will be a community resource. It is envisioned that the community will embrace the park and develop an '*ohana* that will help with the development and long term care of the park and its resources.

1.2 PARK SECTIONS

The Mahai'ula/Kaulana section is closest to the growing urban communities developing around Kailua-Kona and is the most accessible based on current road conditions and the provision of restrooms. This section contains Ka'elehuluhulu, the largest open sandy area in the park, offering a range of recreational opportunities. Mahai'ula is the best known section of the Park and has the largest bay with reasonably calm waters. This section has existing park facilities and two recreational nodes, Ka'elehuluhulu and Mahai'ula Bay. As such, it was selected to have higher levels of use relative to the other sections. Photos of the Mahai'ula section of the park are presented in Figure 1-6 and 1-7.

Makalawena, owned by Kamehameha Schools, is not a part of the Kekaha Kai State Park (Land ownership is presented in Figure 1-8). Within Makalawena, state ownership includes the portion of land below the high water mark and public trails within the *ahupua'a*. While the state will assure that access is provided to the shoreline by public trails crossing the *ahupua'a* or paths below the high water mark, it will not provide any facilities in this *ahupua'a*. No development plan will be prepared for this privately owned parcel of land.

It is recommended that the DLNR work with Kamehameha Schools to protect natural and cultural resources and provide the appropriate interface between public and private lands.

Awake'e is accessible by a very rough four-wheel drive road and is the least accessible portion of the park. This section encompasses the dominant cinder cone in the region, Pu'u Kuili, and is adjacent to the largest wetland/pond along this segment of the coast; Kapo'ikai in Makalawena (also known as 'Ōpae'ula). This section is designated for low levels of use with very limited and "primitive" types of facilities. This section will have more of a wilderness character. Photos of the Awake'e section of the park are shown in Figure 1-9. Photos of and from Pu'u Kuili are shown in Figure 1-10.

KEKAHA KAI STATE PARK

• Park Development Report •



Ka'elehuluhulu Beach



Mahai'ula Bay



Magoon/Ka'elemakule Houses Complex

KEKAHA KAI STATE PARK

• Park Development Report •



Parking along
access road



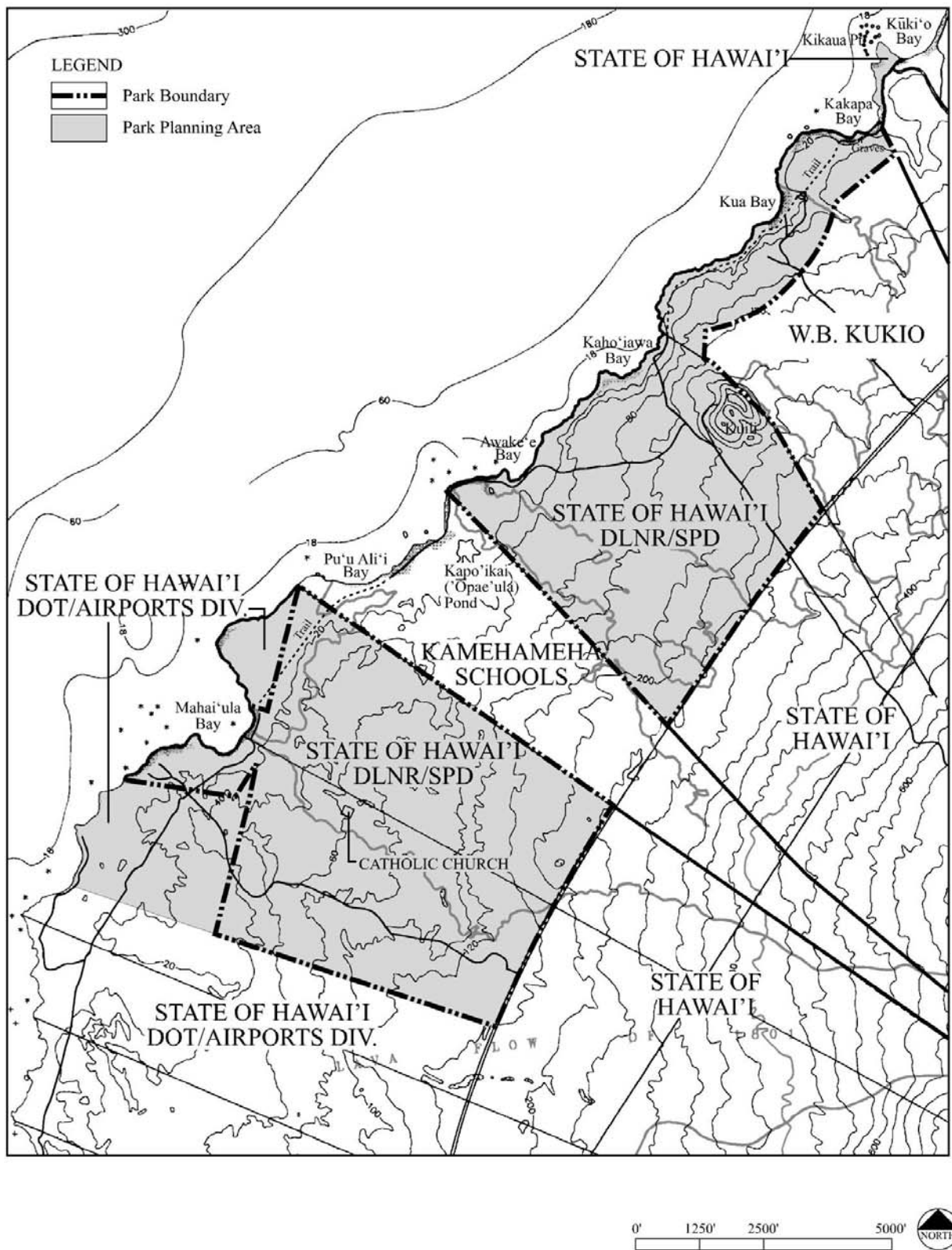
View from proposed
scenic post



Existing restroom
facilities

KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

Land Ownership

Figure 1-8

KEKAHA KAI STATE PARK

• Park Development Report •



View to Hualālai



Awake'e



View towards Pu'u Kuili

KEKAHA KAI STATE PARK

• Park Development Report •



View along Summit



View from Kua Bay



Jeep Trail to Summit

KEKAHA KAI STATE PARK

• Park Development Report •

The Manini'ōwali/Kūki'o portion is also currently difficult to access but the road is shorter and it is also closer to an access road from W.B. Kūki'o lands to the north. Additionally, the recreational value of Kua Bay and its proximity to the resort developments of Kona Village and the Four Seasons has resulted in increased visitor traffic in this section of the park. These visitors access the area by sailing, hiking, driving, and kayaking. The pressure on the resource is expected to increase even more as lands adjacent to the park are developed for resort, commercial and residential uses. This section of the park is designed for moderate levels of use due to the lower carrying capacity of the resources. The beach and bay are smaller and there are significant archaeological features in the area. Photos for the Manini'ōwali / Kūki'o are presented in Figure 1-11. This segment connects to the State owned park developed at Kikaua Point by W.B. Kūki'o.

KEKAHA KAI STATE PARK

• Park Development Report •



Kua Bay Looking North



Kua Bay Looking South



Existing Campers
at Kua Bay

1.3 THE ROLE OF THE COMMUNITY

During the initial planning phases, the Department of Land and Natural Resources conducted an introductory community meeting on September 27, 1994 to present the park concept to the public. A second community meeting followed (April 1995) to present preliminary plans for public comment. These plans represented different intensities of use within each geographic section of the park. The community was asked to select the level of use (high, medium or low) they would like to see occur at the park. Community members selected the low level of use options throughout the park and suggested assembling a task force made up of community organizations to fine-tune the conceptual plan for the whole park and prepare a development plan for the Mahai‘ula section. A community-based task force was convened with representatives of area landowners, cultural/interpretive organizations, natural resources management interests, recreation groups, and commercial recreation interests. A number of government agencies were made available as resource organizations to the Task Force.

The Task Force met four times between November 1995 and July 1996 to refine the development plan for the Mahai‘ula section of the park. The Task Force was divided into a number of committees which also met during this time. Committees include the Cultural Resources Committee, Aquatic Resources Committee, and the Visitor Orientation Center Committee. The work of these committees and the Task Force as a whole guided the evolution of the development plan for Mahai‘ula.

Beginning in September 1996 the Task Force began to focus on the implementation of their planning recommendations. For the implementation work, the Task Force has arranged itself into five subcommittees: Marine Education Committee, Cultural Committee, Renovation Committee, Fundraising Committee, and a Recreation Committee. Four implementation meetings were held. Recommendations from the Task Force are included in Appendix J.

In July and September 2001, the Task Force met two times to focus on the road alignment and location of improvements for the access road to the Manini‘ōwali/Kūki‘o Section.

In addition to Task Force meetings, two community workdays have been held (November 1996 and January 1997). At the first workday, 45 community members, DLNR staff and other volunteers removed over 7 tons of rubbish and debris from the Mahai‘ula area. In January 1997, another workday was organized. This time the Magoon house was painted on the interior and exterior, and over 3 tons of rubbish and debris were removed from the site.

Community participation in the planning and implementation of plans for Kekaha Kai State Park has been extensive. The participation of the Task Force and community as a whole has and will continue to be vital to the successful development of the park.

1.4 PLANNING ASSUMPTIONS

In developing plans for the park, several assumptions were made. They include the following:

Airport Land Holdings at Kaulana: It is assumed that the DLNR Division of State Parks will eventually acquire permanent use rights, or joint management authority, over several parcels within and adjoining Mahai‘ula, which are currently controlled by the State Department of Transportation, Airports Division. This land includes a small parcel at Kāwili Point and an additional 150 acres encompassed by the extension of the park’s southern boundary line straight out to the coast. This area includes lands that are already crossed by the existing park access road and a lateral 4-wheel drive road used by fishermen. A Memorandum of Understanding (MOU) or similar agreement will likely be the mechanism for joint use and management of the State DOT-owned parcels.

Makalawena/Kapo‘ikai Pond: All the land features within one *ahupua‘a* of Makalawena are not included as part of any long range planning for the park. Management and access to Kapo‘ikai Pond and the sandy beaches of the area would continue to be controlled by the landowner, Kamehameha Schools. However, plans for the Ala Kahakai would include lateral coastal access along the Makalawena shoreline between

KEKAHA KAI STATE PARK

• Park Development Report •

Mahai'ula and Awake'e. The *mauka-makai* trail through Makalawena is also a widely recognized trail and its role is currently being reviewed by the State of Hawaii and Kamehameha Schools.

Kikaua Point: Kikaua Point is owned by the State but leased to a non-profit group for park purposes, and managed and maintained by the group. This parcel will be placed under Executive Order to the Division of State Parks, but will not have a "State Park" name nor be incorporated into Kekaha Kai State Park.

Landscaping: Where additional landscaping is proposed, xeriscapes will be preferred to minimize watering requirements. Lawn areas are not generally proposed in the master plan. Also, endemic, indigenous and Polynesian introduction plant materials will be priority choices in areas of increased plantings.

Trails: Various types of trails run throughout the park connecting Kekaha Kai State Park to the larger region. Plans recommend continuation of the Ala Kahakai by way of a continuous coastal foot trail running the entire length of the park. While designated as a National Historic Trail, many segments of the trail have not been specifically described. The plan adopted in this PDR recommends portions of the coastline trails be part of the Ala Kahakai. This trail will include segments of pre-contact trails where these alignments can be identified. Other trails include *mauka-makai* and shorter local trails emanating from coastal *kīpuka* to *mauka* areas various points of interest. Throughout Kekaha Kai State Park pre-contact trails and historic trails will be identified. Trails within the park will be maintained and utilized as cultural and recreational resources.

1.5 PARK DEVELOPMENT PLAN SUMMARY

Each section of the park is designed to provide a different focus and experience for park users based on the section's resources. It was agreed to plan the park for lower intensities of use and consider heavier levels in future phases when facilities, manpower, management systems and other resources are in place to preserve the resources in the face of increasing demand. Limited facilities are sited throughout the park with more concentrated development at Mahai'ula. An activity center, Interpretive Park Technician residence, and interpretive center are sited at Mahai'ula along with picnic tables, grills, restrooms, a dry land botanical garden, and parking area. Awake'e will remain as the wilderness area of the park. Manini'ōwali will be an intermediate level activity area adjacent to the resort and residential developments of Kūki'o and Manini'ōwali. Park facilities will be provided by the adjacent landowner at Manini'ōwali.

Kekaha Kai State Park will be developed in phases, as funding becomes available. Although the Mahai'ula section is indicated as Phase I in the Conceptual Plan, new private funding has become available for the Manini'ōwali/Kūki'o section as provided by earlier land exchange agreements. This section will now be developed first due to available funding.

Section 2.0

PDR - Natural Resources

2.0 NATURAL RESOURCES

2.1 GEOLOGICAL HISTORY

The predominant natural force shaping the landscape of North Kona is Hualālai Volcano. The area of the park is framed by the two major flows from the 1801 eruption. These and prior flows have created a harsh landscape of great beauty. These multiple flows of differing ages overlapping each other create a layered landscape with different lava colors reflecting differences in age, chemical composition and the impact of subsequent weathering. This underlying complexity merges together into a zen-like simplicity of rock and sky, which reflects spirituality close to nature. These flows are excellent examples of the geological processes that have created the Hawaiian Islands and Pu‘u Kuili, the dominant cinder cone in the park. Rising 342 feet above sea level, it stands as a silent sentinel and symbol of the region. One old timer has called it the “ahu” or marker for the region. Its name, which has been interpreted as “memorized temple prayer” by Mary K. Pukui, also signifies its character and importance to the Hawaiians of old. Pu‘u Kuili has been likened to a flying bird when viewed from the ocean (Springer, 1989).

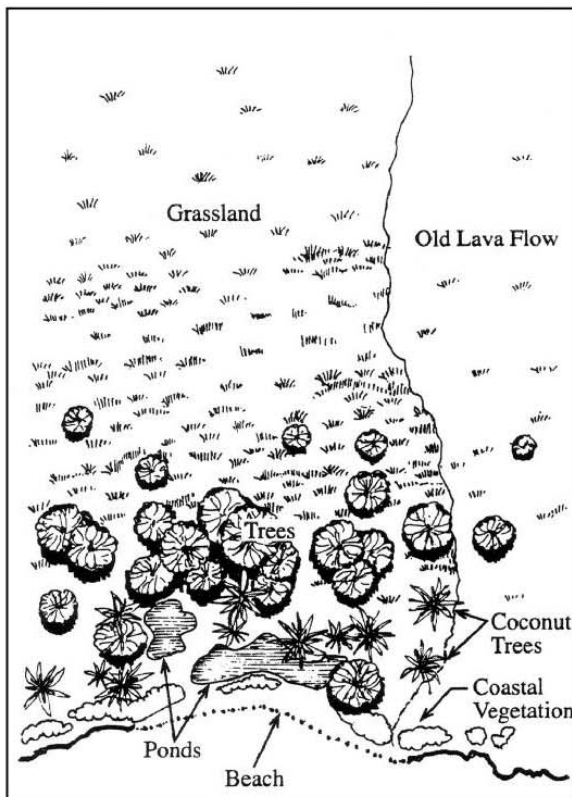
Another natural feature of the region is the series of *kipuka*, oasis-like stands of vegetation, which remain isolated and untouched by lava flows (Figure 2-1). *Kipuka* are often associated with spring or pond complexes. These clusters of vegetation form a welcome relief in the hot lava landscape. It is in these *kipuka* that ancient Hawaiians often created small settlements and rest stops.

The final major natural feature is the coastline. It is a rocky coastline reflective of the newness of the Hawaii Island. Lava flows that have reached the ocean have not yet eroded and form sharp, rocky coastlines. There are salt and pepper shorelines made of a mixture of lava rock and coral limestone in differing levels of erosion and mixing from the action of the sea. Some are sandy black and white beaches such as those found at Ka‘ūpūlehu around Kona Village. Others are black and white rock and boulder beaches such as those found at Kaho‘iawa and Kakapa Bays. Then there are the classic sandy beaches found in small crescent pockets along the coast from Mahai‘ula to Kua Bay. The sandy beaches are scarce on the Kona coast and attract large numbers of users.

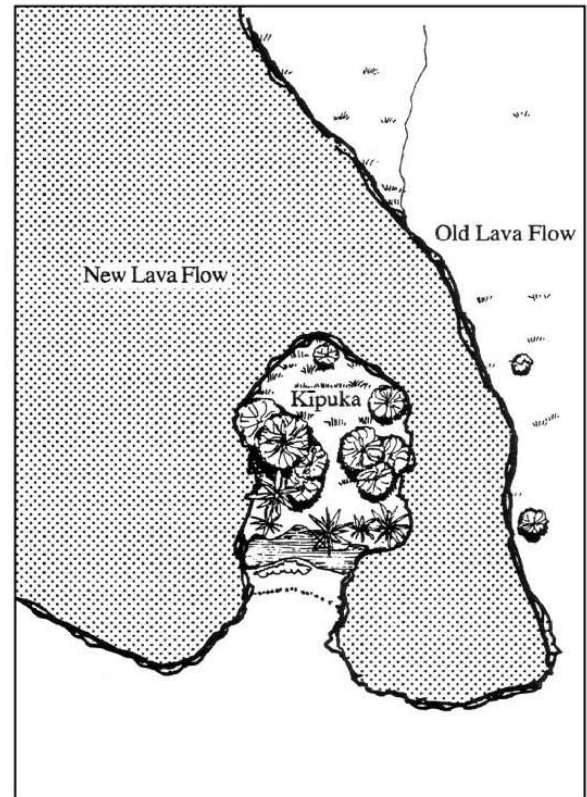
Soil types in the area are related to volcanic activities and coastal processes. There are a few areas where the soil depth is a few inches and supports some vegetation. The land is an overlapping mosaic of several lava flows. Generally, vegetation has grown more densely on the older flows.

KEKAHA KAI STATE PARK

• Park Development Report •



Original Form



Kīpuka Formed by New Lava Flow

2.2 MARINE ENVIRONMENT AND ANCHIALINE PONDS

2.2.1 Marine Environment

Public park uses will have a strong connection to the water. The quality of this marine environment is an integral and important part of the resource inventory for the park.

The waters off of Kekaha Kai State Park are classified AA by the State Department of Health and can be considered pristine. Lack of suspended material results in extremely clear waters. Offshore water quality has been investigated as part of several EIS reports for projects in the area. There are no perennial streams in the region but there are high volumes of groundwater extrusion. Increased nutrient concentrations and lowered salinity in some places are evidence of this large fresh water inflow.

Within the shoreline area (from high splash zone to subtidal breaker zone) there is a variety and abundance of marine life determined largely by wave energy and the topography and bathymetry of the area. The type of lava flow, 'a'ā or *pāhoehoe*, markedly affects the habitat in the intertidal zone. The shorelines along the coast are mainly of three types: 'a'ā flow, *pāhoehoe* flow or sandy beach. Boulders from an 'a'ā flow will increase vertical relief and shelter from the surf.

Near-shore subtidal areas are generally defined by the substrate. Along this coastline, due to the relatively young geological age of the Big Island, coral growth is generally on hard lava, calcareous substrate, or unconsolidated sand or rubble. As such, true coral reefs have not formed but there is a diversity of coral communities. Under prevailing conditions, no single coral species is able to monopolize the substrata.

2.2.2 Anchialine Ponds

Traditional human habitation tended to focus around ponds as sources of water for drinking or the growth of trees and plants, which provided food and shelter in this hot dry coastline. Signs of pre-contact and post-contact human habitation often are found clustered near or around these ponds. These ponds also function as habitats for endangered species. (Figure 2-2).

The park planning area is dotted with ponds; especially near the coastline. Many of these are brackish, anchialine ponds unique to Hawai'i. With their underground connections to the ocean and delayed tidal influences, they are home to a unique flora and fauna composed of lower order algae and tiny mollusks and crustaceans. Anchialine ponds are brackish water ponds with no visible connection to the ocean. An identifying feature of these ponds is the existence of red shrimp (*Halocardia* sp and others) which have migrated from the ocean through cracks in the basaltic lava flows. These ponds go through a unique evolutionary pattern. Created by lava flows that have reached the coastal areas they begin as depressional areas mixing fresh water and salt water. Eventually they silt in and become dry areas with deeper soils in the middle of rocky lava flows. The largest anchialine pond in the region is Kapo'ikai Pond, commonly known as 'ōpae'ula, in Makalawena.

These ponds vary in their character, size, and quality but all are of value from an environmental or recreational standpoint. Water quality in these ponds has been a problem and, due to their size and fragility, many of the ponds have been negatively impacted by human and animal use.

KEKAHA KAI STATE PARK

• Park Development Report •



Brackish Water Pond
at Manini'ōwali



Kapo'ikai (Makalawena)



Anchialine Pond
at Awake'e

At Ka‘elehuluhulu, there is a fairly large pond by the main parking area and another in a grove of kiawe in the direction of Keāhole Airport. At Mahai‘ula, there is a small complex of ponds by the coconut grove and a larger cluster out at Kawili Point. Kapo‘ikai in Makalawena is a significant resource and, whether it remains in the ownership of Kamehameha Schools or is ultimately managed by a government agency, it is likely to function as a wildlife preserve. Eighteen ponds were numbered and surveyed in the 1986 EIS for Awake‘e (Helber, Hastert, Van Horn, and Kimura). They vary in size from small tidal pool-like pockets in the ‘a‘ā flow to a large complex behind the *kiawe* and *milo* trees at Awake‘e Bay. Four of the ponds are larger with surface areas greater than 1,000 square feet. These ponds are of moderate to shallow depths and have fragile ecosystems. At Manini‘ōwali only one pond is noted; the shallow pond at Kua Bay about 250 feet behind the beach. The pond is a mature anchialine pond with an area of about 150 square feet.

2.3 PLANT COMMUNITIES

Vegetation is sparse on the Kona Coast. Denser and taller stands of trees and coconut palms are generally found along the coastline and near pond areas where trees can obtain water from groundwater sources. Other areas are barren or sparsely vegetated with grasses, bushes or short trees. Botanical surveys (Char 1995) have identified six vegetation community types in the Mahai‘ula section: 1) Coastal, 2) Pond, 3) Fountain grass grassland, 4) *kiawe* forest, 5) Sparse ‘a‘ā, and 6) Roadside. Photographs of these vegetation types are presented in Figure 2-3. Full report is in Appendix E.

Coastal Vegetation: These include several subtypes depending on the type of shoreline. Most of the coastline is rocky, wave swept, and comprised of boulder beaches and headlands. Vegetation is sparse and concentrated in small clumps. A variety of grasses, strand vegetation such as *pā‘ū o Hi‘iaka* (*Jacquemontia ovalifolia* ssp. *sandwicensis*) and low, windswept *kiawe* (*Prosopis pallida*) and pluchea shrubs (*Pluchea symphytifolia*). Along exposed ‘a‘ā, flow coastline clumps of *hinahina* (*Heliotropium anomalum* var. *argenteum*), *naupaka* (*Scaevola sericea*), tree heliotrope (*Tournefortia argentea*) and mats of *pōhuehue* (*Ipomea pes-caprae*) are found. Along sandy beaches, several native species are found. Besides those native coastal species mentioned above they include ‘*aki‘aki* (*Sporobolus virginicus*), *kauna‘oa* (*Cuscuta sandwichiana*) and *alena* (*Boerhavia repens*). On many beaches, large groves of trees have been planted by former residents, which include ironwood (*Casuarinas equisetifolia*), *milo* (*Thespesia populnea*), coconut (*Cocos nucifera*), false *kamani* (*Terminalia catappa*) and *kou* (*Cordia subcordata*). Except for Kua Bay, all of the beach areas have a dense band of *kiawe* where the sand beaches interface the inland rocky substrates.

KEKAHA KAI STATE PARK

• Park Development Report •



Fountaingrass Community



Sparse 'a'ā Community



Pond Vegetation

KEKAHA KAI STATE PARK

• Park Development Report •

Pond Vegetation: This kind of community is found in and around the anchialine pond complexes and wetlands that dot the coastline. Kapo'ikai, the largest pond in the area, is well vegetated and home to many wetland plants and animals. Smaller ponds with emergent vegetation are found along the entire length of the coastline. Some of the ponds support orange colored algae crusts (Schizothrix sp) and floating mats of filamentous blue-green algae. Widgeon grass (Ruppia maritima) is present in some ponds and *makaloa* and *'ākulikuli* are also common in some ponds.

Fountain Grass Grassland: This community is the most common cover in the Mahai'ula. This community occurs predominantly on weathered, oxidized *pāhoehoe* flows. Although other grasses are found in this grassland community, fountain grass is the most common. Scattered in this community are bunches of small shrubs both native and introduced. Some of the more common ones are *'uhaloa* (Waltheria Americana) and *'ilima* (Sida fallax). Widely scattered individual or small clumps of *kiawe* trees also form part of this community. Plant cover is variable and tends to be sparser on the less weathered flows.

Kiawe Forest: This cover is found on very weathered *pāhoehoe* and *'a'ā* flows around the pond areas of Mahai'ula and Makalawena. In Awake'e this community covers extensive areas of the parcel. In places the trees are 18-25 feet tall and form a closed canopy forest. The under story is sparse due to the shade and includes small patches of grass and shrubs. Where there is very little soil, the *kiawe* forest is open with a canopy cover between 30 to 50 percent.

Sparse Vegetation: This category is for plant communities on newer lava flows. Vegetation cover is almost non-existent on the dark lava rock with coverage between 3 to 5 percent of the surface area. What little is found is located in small depressions and cracks within the flows. The few plants found here include pluchea, fountain grass, *'uhaloa*, *kiawe*, and *maiapilo* (Capparis sandwichiana). Noni (Morinda citrifolia) also grows in small crevices and cracks in the lava flow. The density and variety of vegetation increase where newer flows intersect older flows.

Roadside Vegetation: This group describes a type that occurs along Queen Ka'ahumanu Highway and some of the roadways within the park site. While some of the common species of the fountain grass community are also located here, roadside vegetation is made up predominantly of annual species whose composition and number fluctuate with the seasons. Many are introduced species well adapted to disturbed conditions.

Endangered Species: One listed endangered species, the *loulou* palm (Pritchardia affinis), and two category 2 candidate endangered species, the *maiapilo* or native caper (Capparis sandwichiana) and (Fimbristylis hawaiiensis), a small sedge, are present on the Mahai'ula site.

2.4 WILDLIFE

Fauna in the park area is typical of fauna found throughout this region (Ohashi 1995).

Avifauna found in the park planning area are species commonly found along this coast. They include common introduced and migratory species such as the Zebra dove, common myna and northern cardinal. Three endangered waterfowl are reported in the region: the Hawaiian duck (Anas wyvilliana), Hawaiian stilt (Himantopus mexicanus knudseni) and Hawaiian coot (Fulica americana alai). These birds are found at Kapo'ikai and other wetland complexes in the area. Other native birds such as the night heron (Nycticorax nycticorax hoactli) and Hawaiian owl (Asio flammeus sandwichensis) are also found in the region.

With regard to mammals, two endemic species have been recorded in the area. The Hawaiian hoary bat (Lasiurus cinereus semotus) is listed as an endangered species and found sporadically along the Kona Coast. Recently the Hawaiian Monk Seal (Monachus shauinslandi) has been sighted basking on the beach at Mahai'ula. Other mammals include feral cats and goats, mice, rats and mongoose. One introduced but unusual mammal in Kona is the feral donkey (Equus asinus). Nicknamed Kona Nightingales, these

donkeys have a special history in Kona. A wild herd has been observed in neighboring Ka'ūpūlehu and the Ka'elemakule family of Mahai'ula has traditionally been associated with raising donkeys.

Traditionally, the pristine waters of the Kona coast supported a wide variety and diverse multitude of marine fauna. Fish are still plentiful although there have been reports of declining catches and loss of diversity in recent years. The variety and quantity of fish, crustaceans, mollusks and echinoderms in coastal waters is a resource closely associated with this land. Communities along the coast have traditionally been associated with fishing and the ocean is both a cultural as well as a physical resource for the park. 'Ōpelu, moi and aku are some of the fish for which the region is famous. In olden times, fishponds provided a steady source of cultivated fish, such as mullet and āholehole, which added to what was caught in the ocean.

The waters off the coast are also feeding, resting and foraging grounds for the endangered Green Sea and Hawksbill turtles and sometimes the turtles come ashore at isolated beach areas. Dolphins and whales frequent the waters in this area, where they can be seen from the coast at varying distances from the shore.

2.5 SCENIC RESOURCES

Magnificent scenic views of the coastline can be enjoyed from lookouts along Queen Ka'ahumanu Highway, from the Pu'u Koholā National Historic Site, and from other high points along the coast. Within the Kekaha Kai State Park, Pu'u Kuili offers expansive views of the shoreline to the north and south, and of Hualālai to the east (Figure 1-5).

2.6 RESOURCES VALUED FOR PRESERVATION, INTERPRETATION & RECREATION

Resources at Kekaha Kai are typical of this region: sandy shores, coastal *kīpuka*, stark lava fields, marine resources, cultural and historic sites. Resources throughout the Park are valued from three perspectives: preservation, interpretation and recreation.

Preservation: The substance and importance of these criteria varied according to the nature of the resource. Strong cultural values may be tied to a structure or feature. Others had associative value tied to memories and events. Some have high ecological or natural environmental values based on endemism, scarcity or uniqueness. Others provide aesthetic, spiritual or other qualities that encourage preservation. Whatever the reason for significance, the highest value for these resources would be preservation.

Interpretation: Interpretation seeks to heighten visitor awareness and understanding of the resources, thereby promoting respect, protection, and preservation of these resources. There is a range of interpretive opportunities from passive signage to active programs involving guided tours, demonstrations and hands-on exhibits. The nature of the resources, as well as staffing and funding determine which interpretive techniques are appropriate. Opportunities for different types of interpretive activities were evaluated within the constraints of resource sustainability and cultural and social sensitivity. The practicality of implementation was also reviewed.

Recreation: Recreation values also range from active to passive recreation. The nature of the activity, its scarcity in the area and its impact on the resource, which sustains it all, play a role in determining its value. Providing recreational opportunities is a major responsibility for the Division of State Parks. The bills, resolutions and other public policy decisions related to the Kekaha Kai State Park have all stated the importance of recreation. The compatibilities of different uses were assessed in evaluating the plan for this criterion.

KEKAHA KAI STATE PARK

• Park Development Report •

Each park section was divided into sub-sections and evaluated for preservation, interpretation, and recreation value. The sub areas identified at Mahai‘ula include the following:

1. Entrance/Visitor Center
2. Open Space: 1801 Flow and Grasslands
3. Kawili Point and Coastal Open Lands
4. Ka‘elehuluhulu
5. Mahai‘ula
6. Marine/Aquatic Components

The sub areas at Awakwe‘e include:

1. Kaho‘iawa
2. Pu‘u Kuili
3. Awake‘e Bay
4. Anchialine Ponds
5. Marine/Aquatic Components

The sub areas identified at Manini‘ōwali include the following:

1. Kua Bay
2. Kakapa Bay
3. Kikaua Point

In each section the resources were identified and opportunities to address these values were evaluated and established.

2.7 NATURAL RESOURCE INTERPRETIVE THEMES

The landscape of Kekaha is dominated by lava flows, both ancient and recent, and the features associated with volcanic eruptions, such as the cinder cone Pu‘u Kuili. Few plants and land animals have adapted to this harsh dry climate but near shore waters provide a relative abundance of life including Hawai‘i’s unique anchialine ponds.

2.7.1 Geological Themes

Hualālai Volcano and its role in the formation of the Big Island.

- Mid ocean ridges and hotspots.
- Shield volcanoes and their formation.
- Deep ocean depths at short distances from the shore allowing OTEC development.

The 1801 Lava Flow. This lava flow from Hualālai destroyed settlements, fields, and fishponds, leaving behind a black sheet of *pāhoehoe* lava running down the slope of Hualālai to the ocean. This flow serves as a classroom to observe and study several themes related to lava flows and volcanic eruptions:

- Dynamics of lava flow – the distinction between ‘a‘ā and *pāhoehoe*.
- Features created in a flow – tubes, bubbles.
- Where lava meets the sea – anchialine ponds.
- *Kīpuka* – where the old meets the new.
- Volcanic Shorelines
- Pu‘u Kuili and later volcanism.
- Hydrologic cycles.

- Winds and Climate: Diurnal changes, Kona storms and predominant trade winds.

2.7.2 Biological Themes

- Succession – Over time, there is a secession of life on a lava flow. Slowly, plants become established and eventually flourish.
- Ethnobotany – Adoption to an environment with Polynesian introductions.
- Animal Life on the Lava – Introduction of goats and donkeys.
- Endangered Species.
- Endemism.

2.7.3 Marine & Aquatic Themes

- Beginnings of a Reef – offshore environmental evolution.
- Fish Nurseries old and new: Hawaiian fishponds and recent nurture and release programs.
- Management of Marine Resource – From the *kapu* system in early Hawai‘i to the fishing rules and regulations of today, an effort has been made to sustain the marine resources.
- Surfing.
- Shipwrecks.
- Navigation, voyaging and vessels.
- Fish Koa and traditional fishing practices.

Section 3.0

PDR - Cultural Resources

3.0 CULTURAL RESOURCES

3.1 CULTURAL HISTORY OF KEKAHA

Kekaha is the traditional place name given to the lava fields which extend north of Kailua in the district of North Kona to the boundary with South Koholā (Kelly, 1971). These lava fields range in age from ancient to relatively recent (1801 and 1859). The name Kekaha is believed to describe the dry, sun-baked land from Honokōhau, North Kona to ‘Anaeho’omalū, South Koholā. This shoreline was known for its wealth of fishponds, including Kaloko Fishpond at the southern end, the expansive Pa’aiea Fishpond that ran from Keāhole to Ka’elehuluhulu, and the complex of ponds at Kalāhuipua’a (Puakō) at the northern end.

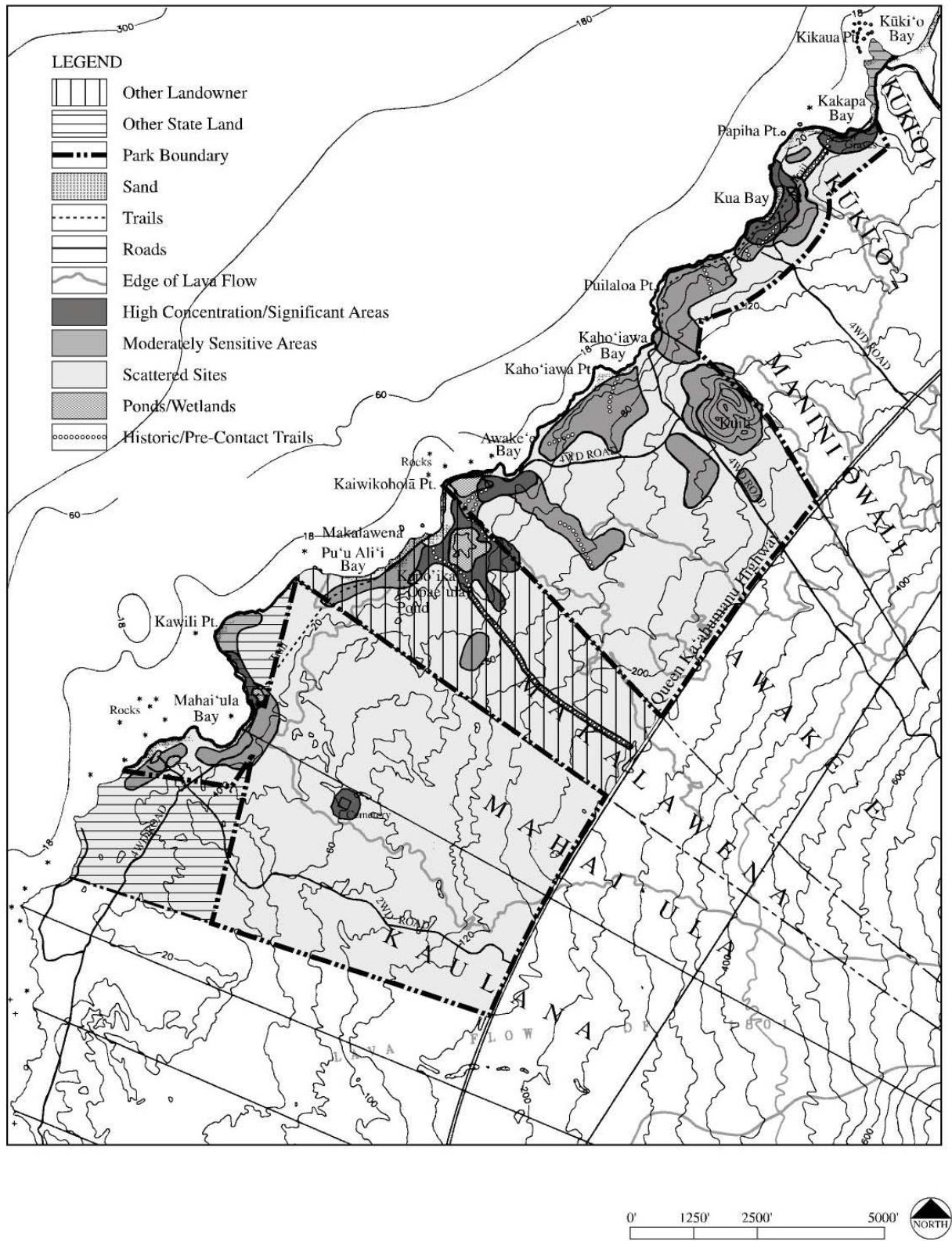
The land is the cultural site, and place names and landforms reflect many of the values and traditions of the place. Manini’ōwali refers to the schooling behavior of *manini* (surgeonfish) in the waters off Kua Bay. Kuili means silent memorialized prayer. Ka’elehuluhulu refers to the scraping of canoe hulls as they are dragged over the *pāhoehoe* of this beach. Many place names have multiple meanings and origins and reflect a richness and depth of the culture. Starting with the regional name Kekaha and *ahupua’a* names that make up the park segments the project site is full of meaning that will be incorporated into Park planning and programs.

3.2 PRE-CONTACT PERIOD ARCHAEOLOGICAL SITES

Cultural resources identified in the area reflect the settlement patterns of the Hawaiians of old. Concentrated in former settlement areas and scattered along old traveling paths, they are located throughout the Kekaha Kai State Park (Figure 3-1). Remnants of house enclosures, trails, salt pans, etc., reflect remnants of the coastal lifestyle of old Hawaii along the arid Kona coast. Along the coast are remnants of the pre-contact foot trails that linked settlements and resource zones. Examples of North Kona Trails are shown in Figure 3-2. Each *ahupua’a* usually had lateral coastal trails connecting it to adjacent *ahupua’a* and providing access to ocean resources as well as *mauka-makai* trails that provided connections to settlements in the wetter, upland areas. An *ala loa* and/or *ala aupuni* (government road) crossed *ahupua’a* and accommodated the activities associated with tributes to the *ali’i* and inter-*ahupua’a* travel.

KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

Historic and Cultural Resources

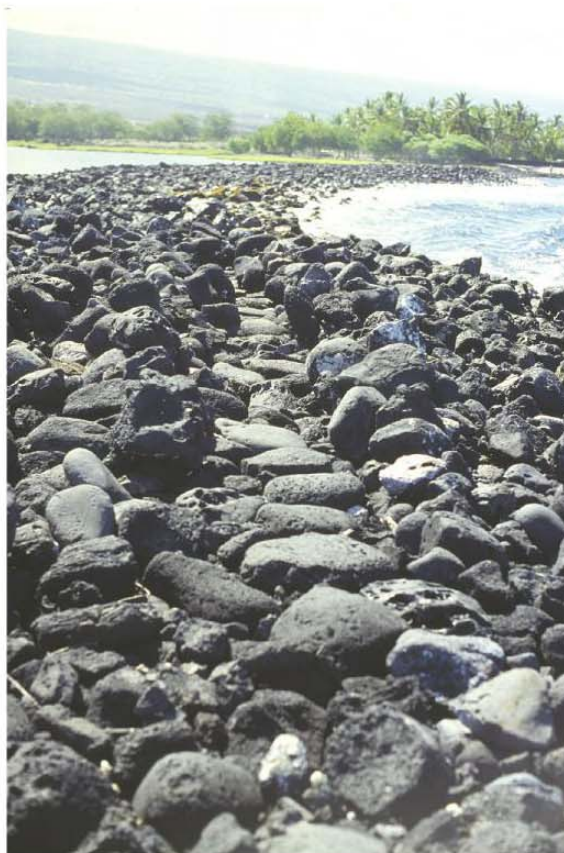
Figure 3-1

KEKAHA KAI STATE PARK

• Park Development Report •



Kūki'o/Manini'ōwali - Trail



Kaloko Honokōhau National Historic Park -
Trail Across Fishpond Wall
(View Towards Visitor Kiosk Area)

3.2.1 Mahai‘ula/Kaulana

Mahai‘ula was the site of a small but well known fishing hamlet in the 19th century, and a traditional stopping place for canoes along the Kona Coast (Maly, 1997). It is near the northern terminus of the old Pa‘aiea fishpond which was used as an inland passage for canoes traveling along the coast. A site next to the Magoon/Ka‘elemakule complex has been used for canoe and boat landings into the 1970s and early 1980s. Behind the crescent dune formations of Mahai‘ula lie burial and habitation features. Canoe landing areas and the residential compound around the Magoon and Ka‘elemakule houses form a complex with historic values associated with the first half of the 20th century. Beyond this compound are more archaeological features, including possible burials and some anchialine ponds in association with older house platforms and possible fishing *ko‘a*.

The legendary cave Kolomikimiki is located in this section (Keawe nui a ‘Umi, or ‘Umiokalani) of the Park. Famous legends are told about this cave including a fishing story involving the *ali‘i-nui* Umi. The cave complex is in a parcel land owned by the Catholic Diocese of Hawaii and associated with burials and the Ka‘elemakule family.

Ka‘elehuluhulu has traditionally been associated with fishing and fishermen. It was well known for the abundance of fish and was part of the outer edge of Pa‘aiea pond. The abundance was associated with both the marine resources and the pond. The smaller pond at Ka‘elehuluhulu which maybe the sole remnant of Pa‘aiea pond also shows signs of internal partition walls that indicate active cultivation of some sort. Behind Ka‘elehuluhulu Beach there is an area with many *papamū* (platforms for a Hawaiian game *kōnane*, which is similar to checkers) etched into the lava in the *kiawe* forest area and on the bare *pāhoehoe*. It was probably a popular shaded resting area out from the hot Kona sun.

A three mile long fishpond named Pa‘aiea, belonging to Kamehameha the Great, is said to have existed near Ka‘elehuluhulu until it was covered by the 1801 flow. The pond started from Keāhole and ended near Ka‘elehuluhulu Beach. While this area is now barren lava flows, there are lava tubes and shelters located along the coastline.

Old timers speak of larger fishing *ko‘a* features along the coast at Ka‘elehuluhulu and Kāwili which were destroyed within living memory.

Off Kāwili Point and Ka‘elehuluhulu, the waves are famous for their size and form. Folk tales report perfect 25-foot waves that one could ride into the bay, especially in olden times. Reports indicate the 1946 tidal wave may have altered the bay and changed this character.

3.2.2 Awake‘e

Pu‘u Kuili is the most prominent cultural resource in this *ahupua‘a*. It is a symbol and landmark of the region and has been used by fishermen to orient themselves while navigating offshore. Resources involving human activities in Awake‘e are clustered in two areas and scattered in the *kiawe* forest and grasslands. Dense concentrations are located near the coastal areas along Kaho‘iawa Bay and Awake‘e Bay. Trails connect the anchialine ponds and other resource areas. The first cluster area is the southern edge of Awake‘e and *mauka* along the edge of the lava flow. The *mauka-makai* trail for this area begins from this location and many features are clustered on both sides of this trail until about halfway to Queen Ka‘ahumanu Highway. Mākālei Cave, a valuable source of drinking water (scarce in this region), is known in local folklore and possibly located in this area.

The second area of concentration is around Kaho‘iawa Bay and the *makai* shoreline at the base of Pu‘u Kuili. Many shelters, midden areas, trail remnants platforms, and other features are located here. Recent

and pre-contact references associate Kaho'iawa with fishing. There are fishing *ko'a*, shelter platforms and midden sites scattered throughout this area.

3.2.3 Manini'ōwali/Kūki'o

This area is rich in cultural resources. Although the park area only encompasses the 1,000-foot strip along the shore, this is the area that is richest in historical and cultural resources. The rich cluster of sites at the base of Pu'u Kuili and along the shoreline of Kaho'iawa Bay extends into the Manini'ōwali *ahupua'a*.

There is a rich complex around Kua Bay; especially around the anchialine pond and the dune area near the shore. Intact canoe shed walls (*hale wa'a*), burials, and shelters are found in this area. Many lava tubes used for shelter, storage, and burials area also located in this area. While the density of features diminishes as one moves *mauka*, agricultural mounds, shelters, and burials are located near the historic *mauka-makai* trails that run through the area. Some intact burial sites were discovered in recent archaeological investigations and were re-sealed after study.

Past Kua Bay, on the old lava flow and the edge of Kakapa Bay, are other very significant structures. Included here are burial platforms, a *heiau*-like structure, *ko'a*, and *papamū*. The historic trail continues on to Kikaua Point and Kūki'o Bay (Uluweuweu Bay) which along with the offshore rocks and the smaller cinder cone *mauka* of Kua Bay, Po'opo'omino, have important associations with the place name legends surrounding Manini'ōwali. The features at Manini'ōwali-Kūki'o are important and require protection and, possibly, interpretation.

3.3 POST-CONTACT SITES

There has never been extensive post contact development within the project area. The only structures now in the park are the group of buildings which make up the old Magoon/Ka'elemakule house complex at Mahai'ula Bay and old *lū'au* facilities at Ka'elehuluhulu Beach. The house complex at Mahai'ula is impressive with many accessory structures around it. They include water tanks, animal enclosures, boat/canoe sheds, windmills, and a pre-empted tennis platform. Historic period walls and enclosures now in ruins are found on the lava fields between Mahai'ula and Ka'elehuluhulu. Structural platforms and walls are also found south of Ka'elehuluhulu. Salt (*pa'akai*) production was an important activity in pre and post contact periods. Salt production pans are found scattered in the area. Remnants of historic period saltpans made of concrete remain south of the beach activity area at Ka'elehuluhulu. The *mauka-makai* trail behind Mahai'ula is a historic period trail that probably replaced an older trail which was destroyed by the flow of 1801. The tsunami of 1946 destroyed many of the historic period structures. A historic jeep road is evident and used frequently by people walking to Makalawena. The jeep road is the main link between Mahai'ula Bay and Makalawena.

While Makalawena is not part of the Park, within the historic period and possibly before, it was the main population center of this district. The area school was located there along with a small village. Except for a few isolated individuals, the 1946 tidal wave essentially ended the cluster settlements along this section of the coast.

Existing infrastructure includes an unimproved two wheel-drive access road at Mahai'ula and four wheel-drive roads in Awake'e and Manini'ōwali leading from Queen Ka'ahumanu Highway to the coast.

3.4 UNDERWATER ARCHAEOLOGICAL SITES (Shipwreck, ko'a)

The waters off Mahai'ula also contain two well-known fishing *ko'a* (*ōpelu* and *aku*). These sites are places in the ocean where specific species of fish gather in greater abundance. Local fishermen know these places and respect their importance in the ecology of the resource. Others have been referred to in legend and folklore, but their locations are less certain. Two shipwrecks are known in the near-shore

waters with a third possibly nearby. The two wrecks have been photographed and their locations identified.

3.5 SIGNIFICANT RESOURCES EVALUATION

Detailed assessments of significance and value are identified in the report *Kekaha Wai 'Ole O Na Kona* by Kumu Pono Associates and various archaeological studies. At this point it is important to emphasize that the policy of the Division of State Parks is to preserve all of these features. Park planning and development will design around the features and relocate new facilities if necessary.

One of the recurring themes of the native and early historic narratives of Kekaha is the wealth of the marine resources and fisheries – those of the deep sea, near-shore, and inland fishponds – of the region. While this is generally known, it is often not captured in planning for a land-based park. Planning for Kekaha Kai recognizes the importance of offshore and pond resources in the region, and the plan will include programs and facilities that are related to these resources.

3.5.1 Culturally Sensitive Sites

Indigenous values make burial sites important and sensitive areas. Shrines and other religious or spiritual places can also be culturally sensitive. The burial compound of the Ka'elemakule family is one such location. Although it is not a part of the park, parklands surround it and park uses and practices will need to respect its value. Descendants of the Ka'elemakule family continue to access and pay respect to their ancestors.

The trail to Kāwili Point has a high concentration of intact structures associated with habitation. It needs to be treated in a careful way and managed to retain its integrity.

The Magoon/Ka'elemakule complex has been heavily impacted in historic times. However, the association of people and place make this area a significant site. Memories and songs associated with this place and the ongoing ambiance of this location make it a site that needs to be treated with sensitivity.

There are caves and lava tubes in the area that still contain midden, artifacts and burials. A complete inventory has not been done. In the future, this inventory needs to be completed and specific sites treated according to their level of sensitivity.

The cluster around Kua Bay and the trail and complexes at Kakapa Bay are also very important and fragile. These sites are doubly sensitive because they are located near areas of high human activity and it is difficult to separate recreational uses from these areas. Interpretive programs, monitoring and enforcement will become increasingly necessary as a way to mitigate the impact of increased human activity. Some of these areas are already showing signs of deterioration and these actions should be put in place soon.

3.5.2 Cultural Interpretive Themes

The archaeological survey and historical research conducted for Kekaha Kai have indicated a cultural continuity in the occupation of this coastline from the pre-contact period into the early 20th Century. Much of the cultural history revolves around fishing, as this dry, lava-covered, leeward shoreline offered little opportunity for farming or other subsistence activities. The long history of fishing is reflected in the artifacts (technology), the sites (*ko'a*/shrines), the midden (food remains), and the traditional cultural practices (*kapu* system). A strong association with the sea is a prominent theme in the memories of the *kūpuna*. Access to this shoreline area was by canoe or overland trails, emphasizing the importance of cultural traditions such as navigation and cultural sites such as the Ala Kahakai. The story of Kekaha is

one of rich cultural traditions that have been passed down through many generations. However, our knowledge of the early occupation is limited and additional archaeological research is recommended to assist in telling the story of Kekaha Kai.

3.5.3 Resource Themes

Kekaha – A land of limited resources . . . or so it seems. Kekaha translates as the dry, sun-baked land (*‘aina malo‘o*). Today, the hot, dry, barren lava landscape of Kekaha Kai would not appear to be a welcome site for early inhabitants. However, the complex at Kāwili Point suggests that native Hawaiians made frequent and regular use of this shoreline for its abundance of marine resources. Based on studies from other parts of the Kona coast, this occupation was probably semi-permanent and seasonal.

Living from the Sea: Hawaiian adapted their fishing technology to the diverse shoreline and offshore environments of the Hawaiian Islands. From the fishhooks of bone and shell to the uniquely Hawaiian fishponds, fish were caught, raised, and harvested as an integral part of the subsistence economy. In addition to fish, shellfish and *limu* (seaweed) were collected from the near-shore zone.

Water: Water would be necessary to sustain life along this shoreline but there is little evidence of freshwater sources. Underground seeps provide much of this vital resource.

Fish and Poi: The fishermen of Kekaha Kai would trade with the farmers *mauka* in the *ahupua‘a* to provide a subsistence base of fish and *kalo* (which was made into *poi*). This exchange of resources between the environmental zones was a major basis of the *ahupua‘a* land division.

Settlement: Descriptions of settlements along the Kona coast in the early 1800s suggest that the shoreline was lined with thatched houses and shaded with coconut and kou trees. Small gardens were cultivated among the barren rocks. Today, stone platforms are reminders of the people who once lived along this shoreline.

Ensuring Abundance: The importance of fishing to the economy of the *ahupua‘a* is reflected in the sites and cultural traditions. They indicate the importance of ensuring the abundance and sustainability of these resources.

Ko‘a (fishing shrines): Offerings made at these sites attracted fish and insured an adequate supply in the future.

Kapu System: Seasonal restrictions on certain resources insured their sustainability and/or reproduction.

Farming the Sea: Pa‘aiea, a massive inland fishpond, is said to have covered 3 miles from Keāhole to Ka‘elehuluhulu. This great pond offered a ready supply of fish and a safe inland water route when the ocean was too rough for canoe travel. Much of the pond was covered by the 1801 lava flow. Kapo‘ikai in Makalawena is commonly called ‘Ōpae‘ula for the red shrimp that was previously harvested from this large pond. Many of the bays in the area were known as spawning grounds and carefully managed by the *konohiki* to insure continued productivity.

Salt Production: The drying and salting of fish preserved this food source for times when the weather and ocean conditions prevented fishing and for travel and trade inland. In the 20th century, drying and salting facilitated the sale of fish in Kailua-Kona and shipping to Honolulu.

Travel and Trade: Sharing the resources within and between the *ahupua‘a* ensured accessibility to the resources from all the environmental zones. Ocean routes and overland trails facilitated this exchange.

KEKAHA KAI STATE PARK

• Park Development Report •

Navigation: A working knowledge of the ocean, weather conditions, and the offshore environment was the foundation for safe canoe travel.

Trails: Coastal trails linked *ahupua'a* while *mauka-makai* trails linked resources zones within an *ahupua'a*. The *ala loa* (long road), or *ala aupuni* (government road), provided lateral access between *ahupua'a*.

3.5.4 Families

The Kamehameha Line in Kona: Kamehameha I is one of the most prominent figures in Hawaiian history and is closely associated with North Kona in the period of transition from the pre-contact to early contact period. Pa'aiea Fishpond is often referred to as Kamehameha's Fishpond. Legendary accounts state that the 1801 flow would not stop until Kamehameha himself appealed to Pele by offering and throwing a lock of his own hair into the flow. From 1812 to 1819, Kamehameha resided at Kamakahonu in Kailua, Kona.

During the Great Māhele of 1848, the Kamehameha family recognized the value to the ponds along the shoreline of Kekaha. Kamehameha III (son of Kamehameha I) claimed Kekaha lands at Haleohi and Pu'uwa'awa'a which included the ponds at Kīholo. Kamehameha V (grandson of Kamehameha I) claimed Kekaha lands at Kaloko and Ka'ūpūlehu, including Kaloko Fishpond. Kekauonohi (granddaughter of Kamehameha I) claimed Honokōhau-nui, including 'Aimakapā Fishpond.

A Sense of Place: The 20th century lifestyle of Kona has been characterized as one of grace and generosity. This spirit of graciousness is reflected in the songs and the memories of *kūpuna*. Generosity is evident in the sharing of resources between families in the Kekaha area. Two such family summaries are presented here as examples but there are many more and the interpretive programs of the Park will highlight this legacy.

Story of the Ka'elemakule Family: The Ka'elemakule family has a long association with Mahai'ula. Their family cemetery compound is located in the grasslands behind the bay.

The elder John Ka'elemakule was born in 1854 at Kaumalumalu, and his mother was a descendent of the Kinimaka line. He was born when Kinimaka was in Kona, living at Makapiko, Kaumalumalu, supervising construction of the road, now called Judd Trail.

In 1936, John Ka'elemakule Senior passed away. Pursuant to his wishes, his remains and those of close to 20 other family members, who had been previously interred elsewhere, were brought to the family burial cave at Kaulana. There, the remains were set in place with others that had been originally interred in the cave, and at John Ka'elemakule Senior's instruction, the cave was sealed. On September 28, 1936, the elder of Ka'elemakule's surviving children consolidated the title of the Mahai'ula property under the ownership of Solomon Ka'elemakule. On October 16, 1936, Solomon Ka'elemakule sold the 40-acre beach lot to Ruth Dorothy Magoon, wife of A.K. Magoon, retaining the one-acre cemetery lot for the Ka'elemakule family.

Story of the Magoon family: The sale of Mahai'ula-Kaulana to Ruth D. Magoon in the 1930s began an ownership tradition which lasted for approximately 55 years. The Magoon family appreciated the significance of the land to its former tenants and they assumed a stewardship responsibility for some of the sacred sites on the land.

In a 1997 interview, Tessa Gay Kamākia Magoon Dye, granddaughter of A.K. Magoon provided her memories of the property. Nearly every summer, between 1948 to the 1960s, Tessa visited Mahai'ula with her family and numerous friends that converged at the house in August to celebrate A.K. Magoon's birthday.

After A.K. Magoon passed away, his son George Magoon operated a diving center out of the home from 1968-1971 (Clark 1985). Diving operations tapered off and today the Magoon house sits abandoned overlooking Mahai'ula Bay. When George Magoon died in 1986, he was cremated and his ashes were scattered in Mahai'ula Bay as he desired.

3.6 CULTURAL RESOURCE MANAGEMENT AND INTERPRETIVE PROGRAMS

This report will outline the cultural resource management and interpretive programs which will be developed as separate, more detailed plans by the Division of State Parks.

Baseline Studies

Inventory Level surveys have been conducted for all the areas projected for development of park facilities. These studies will guide development in these areas to ensure that all features are protected to the maximum extent possible. These studies will also form the basis for the signage and interpretive programs in the park (Dye, 2002).

It should be noted that there are many sections of the park that have not been inventoried. Should recreational activities or new facilities be considered for these areas and inventory level survey will be conducted before the use or facility is allowed.

Interpretive Areas

Several areas in the park have been identified as interpretive areas in this project development report. These are areas where high concentrations of archaeological features within relatively easy access of day use areas or roadways and trails are found. A detailed management plan for each of these areas will be developed since each site is different and the potential mitigation and interpretive proposals will be different. The interpretive park technician will develop these plans with the assistance of community advisory groups and *kūpuna* from the area. The plan will include signage and restoration plans for many of the features in these complexes. It is felt that education and local ownership are the best protection for resources in such areas because the presence and impact of people are unavoidable in these areas. These areas are identified for each section of the park.

Mitigation

While the policy of the Division of State Parks is the protection of all archaeological resources, protection is a dynamic activity requiring different levels of baseline study, maintenance and restoration. The mitigation plan identified in the approved inventory survey will guide the treatment of archeological and historical features within the Park. The various inventory level surveys conducted for the different areas of the park are included as part of the PDR by reference. The mitigation plans of these surveys shall be followed to the maximum extent practicable. As new areas are covered by inventory level surveys, their recommendations will also be added to this PDR.

Ka'elemakule House: This historic house is projected to facilitate the docent program for the park. It will also serve as the oral history center for the history and culture of the region. A docent program is an important part of any cultural resource management program. Funding from private sources should be pursued to augment State Parks budgets to provide salaries and expenses for the *kūpuna* and others that work for this program. A combination of public and private funding seems best due to its flexibility and potential for enhancing a sense of community ownership of the resources.

KEKAHA KAI STATE PARK

• Park Development Report •

Entrance Visitor Museum:

This facility was projected as a future depository of artifact and implements found in the Kona region from various projects along the coast. At present, there is no good comprehensive venue for the curatorship or display of items associated with the Coast. This is a long-term goal and this facility is planned for the main entrance to the Park in Mahai'ula/Kaulana.

Iwi Burial Program: Periodically during construction or due to natural or human-induced erosion *iwi kūpuna* are exposed. Whenever this occurs, the State Historic Preservation Office should be notified as required by law. In anticipation for these instances, several sites within each *ahupua'a* for the reinterment of the *iwi* should be identified and added to this plan. This should be done in collaboration with lineal descendants of the land and the Hawai'i Island Burial Council. Proper protocol should be observed during the reinterment ceremony. The question of signage should be determined by this group.

Restoration and Renovation: Some historic and archaeological features will be recommended for restoration. Restoration activities will be reviewed and approved by the SHPD with consultation from local *kūpuna* and community groups. Trail restoration will be a specific and large subset of this kind of activity. Some special features in this class of action include the Ka'elemakule House and the saltpans at Ka'elehuluhulu. Restoration will also include revegetation of sites known in oral traditions for specific plants. Examples of this include the coconut palms at Keawaula and the *kou* trees in the dune behind Mahai'ula. Addition of *Pritchardia affinis* near anchialine ponds and *Capparis sandwichiana* as groundcover will be considered as a part of this program

Education Programs: Resource protection, management and education are inextricably linked. The docent and education programs will all include programs and information on cultural resources with value messages about their importance and fragility. An ethic of cultural sensitivity and stewardship will be emphasized in these programs. Educational programs will be headquartered in the Magoon House/Education Center at Mahai'ula.

Dry land Botanical Garden: This facility will be primarily an educational facility but the knowledge gained and transmitted will aid in the preservation and interpretation of cultural resources of the entire Park. Samples of dry land gardening techniques and plants will make visitors more conscious of the resources in the rest of the Park.

Section 4.0

PDR - Recreational and Educational Opportunities

4.0 RECREATIONAL AND EDUCATIONAL OPPORTUNITIES

4.1 PARK USERS/AUDIENCE AND RESOURCES

Park users include island residents and visitors. Existing recreational and natural resources throughout the park are presented in Figure 4-1. It includes a wide range of outdoor resources for both active and passive recreational uses. Kekaha Kai represents an opportunity to expand outdoor amenities for the growing resident population of West Hawai'i and its expanding visitor industry. The northern part of the Park will have regular use from the adjacent residential developments of Hualālai and Kūki'o.

The Kona Coast has an extreme scarcity of coastal camping facilities. The cabins at Hāpuna Beach Park and grounds at Spencer Beach Park in South Kohala provide camping opportunities north of the Kekaha Kai State Park. There are no coastal camping areas to the south until well past Kailua-Kona. The absence of legally approved campsites will become an increasing problem as the Ala Kahakai is developed and popularized. The major limitations to the provision of camping sites are the sustainable capacity of the resources and the potential security and maintenance problems that may arise.

Camping is presently not allowed at Kekaha Kai State Park. Access to the shore is controlled with a gate located on the access road near Queen Ka'ahumanu Highway.

As a wilderness park, Kekaha Kai State Park will provide opportunities for a variety of hiking experiences. Lateral coastal trails and *mauka-makai* trails provide visitors with varied wilderness experiences. Currently, trails in the park are unmarked and hikers must rely on their personal knowledge of the area. Caution is needed as the terrain is rough, the sun hot, and emergency help is far away.

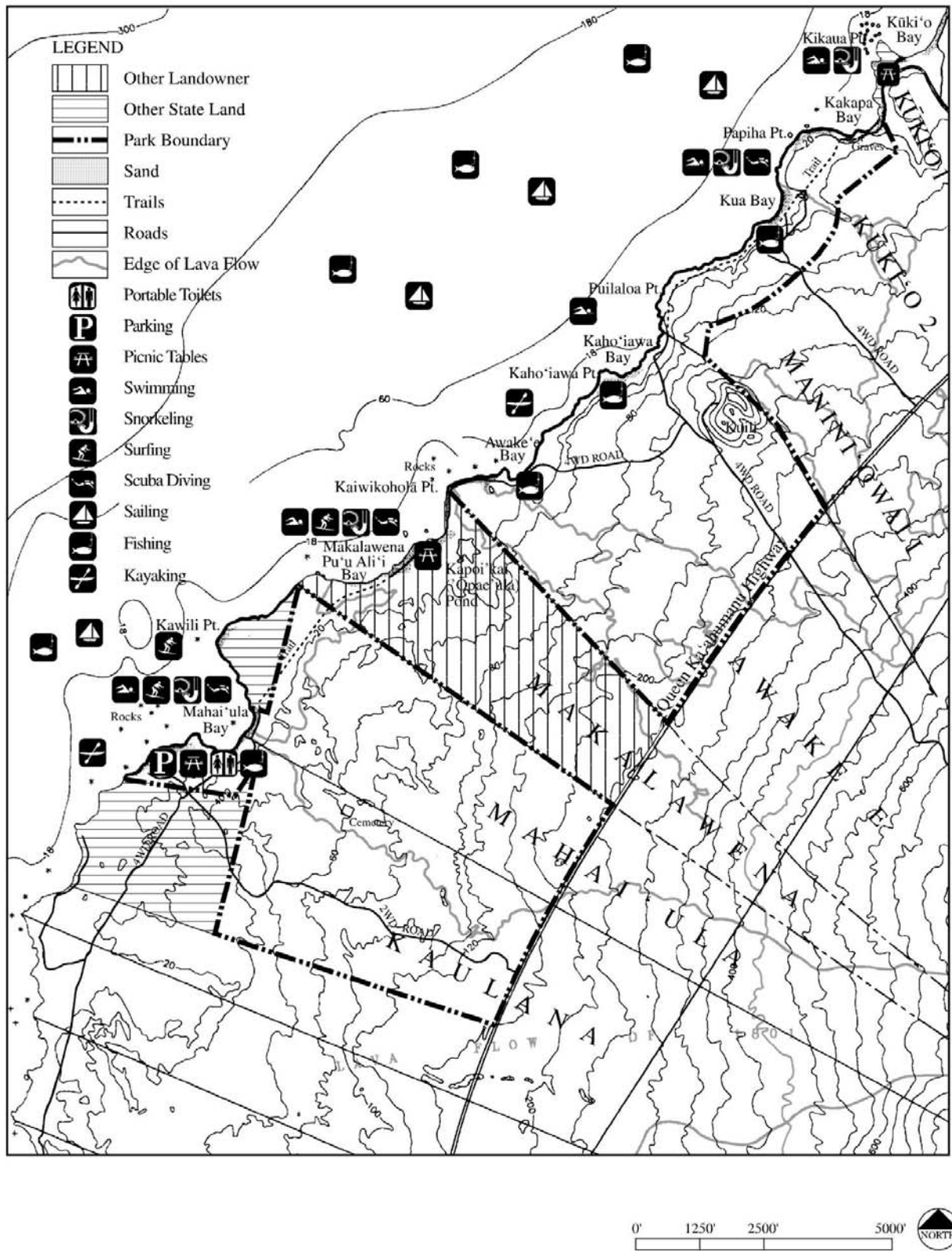
Kekaha Kai State Park is not conducive to extensive biking. The rough lava fields and sandy shore are better experienced on foot. Queen Ka'ahumanu Highway is a popular route for bikers in Kona and especially for athletes training for the world-famous Ironman Triathlon. Park resources and facilities can support bicyclists; however, there will not be extensive bike trails within the park.

Beach areas naturally provide a 'get away' from the business of everyday life. Calm waters, warm sand and limitless views are qualities which enhance relaxation for park users. As a wilderness park, this section provides many areas with the relaxing atmosphere valued by residents and visitors.

Interpretive programs are designed to enhance the visitor experience by provoking a sense of understanding and awareness about the natural and cultural history of a place. Using various interpretive devices and materials, these programs can also encourage proper behavior and respect for the fragile and irreplaceable resources. The programs at Kekaha Kai will focus on environmental education and Hawaiian cultural adaptation to the Kekaha region. The facilities and themes for the proposed program are summarized in this development plan and will be detailed in a separate interpretive plan for the park.

KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

Existing Recreational Resources

Figure 4-1

One of the major objectives of the interpretive program voiced by the Task Force is to promote the use of traditional place names. These names tie a people to a place and its history. The translation of place names can give clues to the significance, history, and use of a location. As much as possible traditional place names will be incorporated in all interpretive talks, written interpretive materials, maps and *ahupua'a* boundary signs.

Another important concern raised by the Task Force was the need for ongoing consultation with the *kūpuna* and resource persons during the development and implementation of the interpretive programs. Various program activities will seek the participation of these persons as docents, teachers, and *kūpuna* which will promote historical accuracy and interpretations closer to source references.

Signs are considered a passive form of interpretation and are developed to provide the park visitors with information that will orient them to the park and enhance their understanding of the park features. These signs often include information about the natural and cultural resources, the activities and facilities available in the park, park rules, and safety precautions.

The Park is ideal as an outdoor classroom. The resources readily illustrate interrelationships in nature and the potential impact of man. The anchialine ponds are an excellent example of this relationship between the land and the ocean and how this fragile resource can be threatened by human actions. In this outdoor classroom, the student not only learns about the resources but also understands the goals of resource management and sustainability. When the *ahupua'a* concept is presented in this outdoor setting, the student can appreciate the environmental strategies developed by the early Hawaiians.

4.2 MAHAIULA/KAULANA

With one of the larger sand beaches in West Hawai'i, Ka'elehuluhulu will continue to attract a number of beach goers. With improved facilities and parking capacity, the Mahai'ula section of the park will be even more popular with Kona residents.

4.2.1 Ocean-related Activities

The ocean-related activities available at Mahai'ula and Ka'elehuluhulu appeal to residents and visitors, and to families and individuals. The Mahai'ula section of the Kekaha Kai State Park has long been a favorite sunbathing, swimming, and snorkeling area. In the winter months, surfing at Kāwili Point is popular. Snorkeling is also popular within the protected areas of Mahai'ula Bay.

Fishing is popular all along the coast.

A kayak launching area has recently been designated at Ka'elehuluhulu. In addition, a day mooring site is planned for boaters in the waters off Mahai'ula.

The waters and shore of the Mahai'ula/Kaulana section of the park provide a range of recreational opportunities in a very beautiful setting.

4.2.2 Picnicking

With a shaded backshore area, Ka'elehuluhulu beach is already a favorite picnicking location. Several picnic tables are available for these occasions. There are also a limited number of picnic tables at Mahai'ula. There is potential to expand picnic areas at Mahai'ula and Ka'elehuluhulu. New picnic areas will be enhanced with landscaping for comfort and enjoyment.

4.2.3 Camping

Mahai'ula is a logical place to have camping facilities. However, it is recognized that camping must be properly managed or the natural resources may be impacted. The back dune area, within the *kiawe*, *kou* and coconut groves behind Mahai'ula Bay seems the appropriate place for camping. The vegetation in this area provides protected shaded areas.

4.2.4 Hiking

There is an existing foot trail running around Kāwili Point and a jeep trail leading north from Mahai‘ula to Makalawena. The Ala Kahakai will be developed through Kekaha Kai State Park. In some sections there will be two pathways; the older, traditional coastal trails used by the ancient Hawaiians and the more recent jeep trails used in the 19th and early 20th century. A *mauka-makai* trail starts at the back of Mahai‘ula Bay and crosses over the 1801 flow to the highway.

4.2.5 Biking

The access road to Mahai‘ula will be accessible to bikes. The lateral coastal trails and four wheeled drive roads are useable by mountain bikes.

4.2.6 Relaxation

The Mahai‘ula/Kaulana section of the park is ideal for relaxation. It is relatively accessible and has many quiet areas for relaxation and medication. The only negative of this part of the park for this purpose is the proximity of the airport. However, the natural environment partially masks the sounds and mitigates the intrusion.

4.2.7 Interpretive Programs

The concept of the outdoor classroom was a subject of discussion during task force meetings over the last several years. This idea stems partly from the existence of the Magoon and Ka’elemakule houses as bases from which such programs could be held. From a classroom format in these buildings, students and visitors could immediately walk into an outdoor learning experience. The classroom becomes the lava fields, the ocean, the anchialine ponds, and the archaeological sites.

Mahai‘ula is already the site of a mullet release program. These aquatic programs can be expanded and tied into educational programs.

Dry land botany and cultivation practices can be developed into educational and cultural programs. Existing and cultivated plants may be used for these programs.

Fishing and navigational programs may be developed. Mahai‘ula Bay and the offshore resources provide a rich outdoor laboratory for these skills and programs.

4.2.8 Interpretive Signs

The interpretive signs designed for Kekaha Kai State Park should conform to the general guidelines established for interpretive signs within the state park system. Likewise, design elements for the park should be carried out in all the signs.

4.3 AWAKE’E

The concept for this part of the park is true wilderness and park users are expected to be fishermen and hikers rather than sunbathers and picnickers. Also, kayakers may also stop by along their route up and down the coast.

4.3.1. Ocean Related Activities

Ocean recreation at Awake’e is expected to center around fishing. Swimming and sunbathing will be limited because the shore at Awake’e is generally rocky and because there are more accessible, sandy beaches in other areas of the park.

Kaho’iawa is very popular among local fishermen as a good place for fishing; especially night fishing. Ad hoc camping sites for fishing are found in this area and are generally well-maintained by local

fishermen. Fishing will be supported with a small parking area and primitive campsites. There are some small sandy patches where canoes and kayaks could land and wading would be enjoyable.

The shoreline in this area is a good place to view marine mammals. Spinner dolphins abound in the waters off the coast and are often visible towards the entrance to Makalawena. The name of the point at Makalawena, Kaiwikoholā, also indicates the presence of whales off the coast.

4.3.2 Picnicking

Accommodations will be Spartan; reflecting the wilderness quality and concept of this area. Facilities will be designed and access managed to maintain the natural, wilderness quality of the area. People who want to picnic here may select picnic sites to take advantage of natural places in the rocks, bushes and kiawe forest to enjoy the site.

4.3.3 Camping

At present, fishermen have created an ad hoc overnight area around Kaho'iawa. Cleared camping areas and circles of rocks for fireplaces have been created. Figure 4-2. Fishermen use these areas for multiple day and night fishing. These activities will be supported in this location with new facilities and increased maintenance for convenience and sanitary purposes.

The forested area behind the sandy beach at Awake'e is a good location for another camping area. Placement of the site will respect archaeological sites nearby.

KEKAHA KAI STATE PARK

• Park Development Report •



Camping areas being used



Camping areas being used

4.3.4 Hiking

The Ala Kahakai is well established through much of this section of the coast. Where appropriate, trails should be marked. In the future, sections of the trails that have disappeared can be recreated in a manner similar to sections that have been preserved. The old *mauka-makai* trail that starts behind Awake'e Bay may be marked and enhanced. This trail may be designated and maintained to retain its historic character. A connection can be developed to tie the historic trail to the parking area near the entrance to Awake'e by the highway. Additional trails will be designated from the parking area to Pu'u Kuili. Trails are intended to provide access to significant wilderness features such as Pu'u Kuili or resources such as good fishing areas.

The existing jeep road to the summit of Pu'u Kuili will be closed and turned into a pedestrian trail. This trail will be enhanced into a loop hike from a parking area along the mauka base of the *pu'u*.

4.3.5 Biking

As discussed in the Mahai'ula Section, Kekaha Kai State Park is not conducive to extensive biking. The access road to Awake'e will be accessible to bikes.

4.3.6 Relaxation

Beach areas naturally provide a 'getaway' from the business of everyday life. Calm waters, warm sand and limitless views are qualities which enhance relaxation for park users. As a wilderness park, this section provides many areas with the relaxing atmosphere valued by residents and visitors.

4.3.7 Interpretive Programs

The Awake'e complex of anchialine ponds is the best example of this unique ecosystem within the park boundaries. These ponds are also good examples of the geological evolutionary pattern of these ecosystems.

4.3.8 Interpretive Signs

Since Awake'e will be the most wilderness-like section of the park, signage should be minimized. Detailed, explanatory displays are more appropriately developed at the visitor center or Education Center at Mahai'ula. Signage at Awake'e should identify resources and give precautionary notices to people so that they will treat the features with respect. The summit of Pu'u Kuili provides an unobstructed view of the Kona shoreline and *mauka* areas. While the familiar profile of Pu'u Kuili should remain free of structures, a small in-ground or low profile marker could provide valuable information and orientation from the *pu'u*.

4.4 MANINI'ŌWALI/KŪK'IO

4.4.1 Ocean Related Activities

Ocean recreation in Manini'ōwali consists of fishing along the rocky shoreline and swimming, snorkeling, and sunbathing in Kua Bay. Kua Bay is one of the most beautiful bays along the coast and is very popular with residents and visitors alike. It needs to be protected. Maintenance and enforcement activities must be constant and proactive. Surfing is also popular during the winter months at Kua Bay. Because the Bay is so picturesque, private boats often anchor offshore with people swimming, snorkeling and fishing from the boat.

Much of the coastline is rocky boulder beaches or sharp lava escarpments. Fishing and gathering occur along these rocky edges. These rocky coastlines have an aesthetic beauty of their own highlighted by crashing ocean waves and aquamarine patchworks of coral, boulders and sand.

4.4.2 Picnicking

The area *mauka* of Kua Bay is a popular day area for visitors. The site is fairly level and can be readily developed into a day use area with picnic facilities. The density of archaeological features in this area will require careful site planning and management.

4.4.3 Camping

As the Ala Kahakai becomes more popular and the population of South Kohala and North Kona continues to grow, there will be a growing demand for coastal camping facilities, along the length of the Ala Kahakai. There will be a need to designate several places for people to stop and camp, otherwise people will camp in undesignated places which will have a detrimental impact on the resources and make enforcement and cleanup difficult. The closest recreation area (currently undeveloped) is Kīholo, to the north about seven miles away. The trek from Kīholo is very hot. Much of the walk is over the 1801 Ka'ūpūlehu lava flow; a rough coastal terrain with very little vegetation or cover. By the time hikers get to Manini'ōwali, many will be hot, tired and ready to rest. Also, with the availability of water, this will be a logical place to wash up, use the restrooms, replenish water, and rest for the next segment of the trail. Easy access from the highway and water availability will also make this site a logical place for family camping. A sandy area near the shoreline at the southern end of Kua Bay provides a soft spot for campers. Some people already camp in this area. The amount of camping allowed will depend on the support facilities developed and the level of management provided.

4.4.4 Hiking

The Ala Kahakai will be the main trail along the coast and clearly designated along this length of the park. A network of new trails could be connected to the main trail. Some old historic trails running through the Kūki'o project site will also connect up to the Ala Kahakai.

4.4.5 Biking

As discussed in the Mahai'ula Section, Kekaha Kai State Park is not conducive to extensive biking. Of course, the access road to Kua Bay will be paved making it readily accessible to bikers.

4.4.6 Relaxation

Beach areas naturally provide a 'get away' from the business of everyday life. Calm waters, warm sand and limitless views are qualities which enhance relaxation for park users. This section of the Park provides many areas with the relaxing atmosphere valued by residents and visitors. Easy access and improved facilities will greatly enhance these activities at Manini'ōwali.

4.4.7 Interpretive Programs

Manini'ōwali/Kūki'o is rich in archeological resources. A danger to the resources exists because the concentration of features is high and their location is near activity areas and pathways. The park is narrow in this area and there is not much flexibility in moving circulation pathways away from sensitive archeological sites. In this context, the best approach is to create clear vehicular and pedestrian pathways and install landscaping and signage in a manner that minimizes ignorant destruction of resources. Features should be identified with signs and requests for respect. Access should be limited to some features such as burial platforms at *heiau* at Kakapa, canoe shed features, and lava tube entrances. While barriers will not stop vandals, they are clear signals that most people respect.

The coastal section of Manini'ōwali around Kua Bay is a precious resource but it is a small resource with limited capacity. It needs to be managed effectively. The archeological features are significant and also need to be managed for protection. Security and management cannot be overemphasized for this part of the park.

4.4.8 Interpretive Signs

KEKAHA KAI STATE PARK

• Park Development Report •

Signage should be developed. Sensitive areas should be designated but specific features should probably not be identified as this may bring attention to them. Interpretive signs will be important because this will be a highly accessible area.

Section 5.0

PDR - Planning Considerations

5.0 PLANNING CONSIDERATIONS

This section presents the planning framework for Kekaha Kai State Park. Guiding principles, individual development plans, the role of the community, and a summary of the park conceptual plan are included.

5.1 STATE PARK GOALS AND GUIDING PRINCIPLES

The concept and desire for a regional park in North Kona have existed for quite a long time. Two major policy directions have been at the core of all park development efforts in the West Hawai'i region. The first is the desire to provide public access to coastal recreational and natural areas. The second is a focus on the sustainability, protection and preservation of cultural and natural resources.

Based on these policy directions, several basic principles and concepts guided the development of the conceptual plan. They are:

- Recreational opportunities will be provided in balance with resource protection.
- The principles of resource conservation and sustainability will guide development and management.
- The park is part of a network of parks along the Kona coast and serves a larger region and community.
- Designs will incorporate the *ahupua'a* concept reflective of the early settlement patterns and management practices of indigenous Hawaiians.
- This is a wilderness park and its character will reflect wilderness values.
- Educational programs will be emphasized in the design and management of the park.

5.2 DEVELOPMENT PLAN PROCESS

The Kekaha Kai State Park Conceptual Plan developed a vision for the entire park. For planning purposes the park is divided into three sections: Mahai'ula/Kaulana, Awake'e, and Manini'ōwali/Kūki'o. Existing conditions, resource capacities, traditional *ahupua'a* concepts for planning and management, historic settlement patterns and projected demand for recreational use were considered in developing the conceptual plan. Each section of the park is designed to provide a different focus and experience for park visitors.

While the Park Development Report is freestanding, the Conceptual Plan Report and the Development Plan are considered companion documents and should be used together.

5.3 INFRASTRUCTURE AND FACILITIES

5.3.1 Infrastructure

There is no utility service to the Kekaha Kai State Park.

Water System: There are no Hawai'i County waterlines near the Kekaha Kai State Park. However, the water lines will be installed at the Kūki'o development near the Manini'ōwali/Kūki'o section of the park. The nearest Department of Water Supply reservoir is the Keāhole Reservoir located across Queen Ka'ahumanu Highway *mauka* of Keāhole airport (approximately 3 miles south of the project).

KEKAHA KAI STATE PARK

• Park Development Report •

Wastewater: There are no wastewater treatment and disposal facilities in the park area. There are several portable toilets at Mahai'ula and vault toilets at Ka'elehuluhulu. There are no toilets at Kua Bay or in Awake'e.

The closest public sewage system to Mahai'ula is a small 0.04 million gallon per day (mgd) package treatment plant maintained by the State of Hawai'i to serve airport operations at the Keāhole Airport. A new wastewater treatment facility with a design capacity of 2.8 mgd is currently being designed for a site near Honokōhau Harbor. The distance between Mahai'ula and the future sewage treatment facility is approximately 8 miles. A sewage system will also be developed as part of the Kūki'o development adjacent to the Manini'ōwali/Kūki'o section of the park.

Most of the park area is a Critical Wastewater Disposal Area where the construction of new cesspools is prohibited. Areas of the park that are at a minimum of 1000 feet from the shoreline and at an elevation of 100 or more are considered non-critical wastewater disposal areas. As a State facility, cesspools are not permitted in these areas. All wastewater should be treated and reused wherever possible to minimize the discharge of wastewater to the ground and near shore waters.

Storm Water Drainage: The geology of the subject area is generally comprised of highly permeable rocks of the Hualālai volcanic series. This highly permeable formation lacks definitive drainage ways, indicating that surface runoff is virtually non-existent. There are no drainage improvements onsite.

Electrical Power: Existing electrical service in the area surrounding the park is provided by Hawai'i Electric Light Company (HELCO) via a 69-KV overhead transmission line located approximately 3,000 to 3,300 feet *mauka* of the Queen Ka'ahumanu Highway. However, there are no power lines within the park.

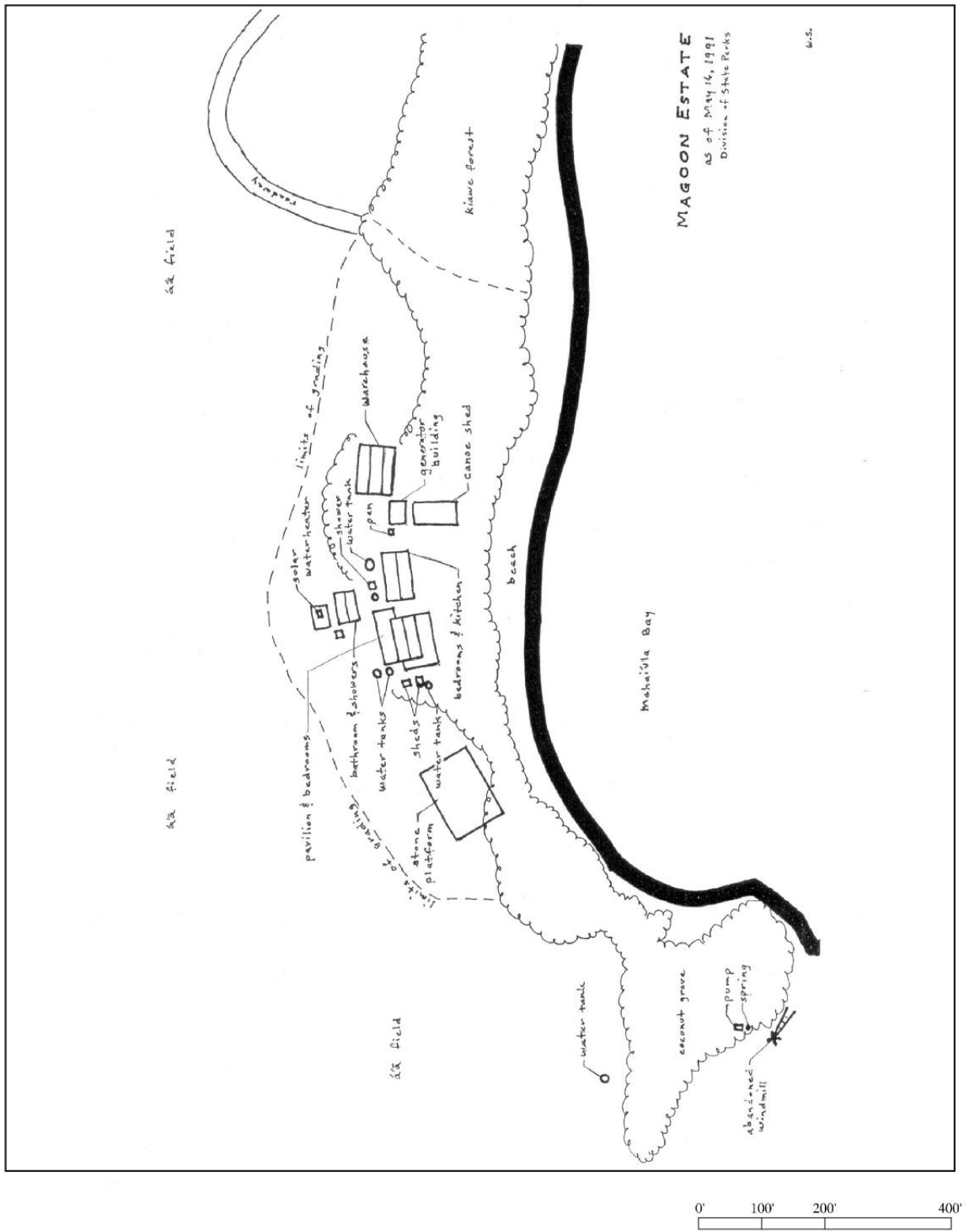
5.3.2 Facilities

Roadways: The Queen Ka'ahumanu Highway is the primary arterial highway between Kailua-Kona and Kawaihae and provides the main access route to the park. The only two-wheel drive road within the Kekaha Kai State Park site is a rough poorly-paved road leading from Queen Ka'ahumanu Highway through Kaulana, including a section of State Department of Transportation land, to a parking area at Ka'elehuluhulu Beach and Mahai'ula Bay. Access to Mahai'ula on this road is controlled by a locked gate near the highway. There are chains controlling the secondary spurs to Mahai'ula and Mākole'ā Beach. The state park at Mahai'ula is currently open six days a week. There is a four-wheel drive road at Awake'e which leads from the highway to Pu'u Kuili, Kaho'iawa Bay, Awake'e Bay, and the locked gate at the border of Makalawena. A four-wheel drive road through private lands in Manini'ōwali/Kūki'o links the highway with Kua Bay and the coastline. An unimproved dirt road through W.B. Kūki'o land accesses Kikaua Point.

Other Facilities: Existing facilities in the park are minimal. Trash receptacles are provided in a few places. Graded, unpaved parking areas are provided at both Ka'elehuluhulu and Mahai'ula. Picnic tables and benches are also provided in the two areas. There are no facilities in Awake'e or Manini'ōwali/Kūki'o. The Magoon/Ka'elemakule house complex and Division of State Parks maintenance/storage sheds at Mahai'ula are the only structures in the park (Figure 5-1 and 5-2). Note that these figures are 1991 conditions.

KEKAHA KAI STATE PARK

• Park Development Report •



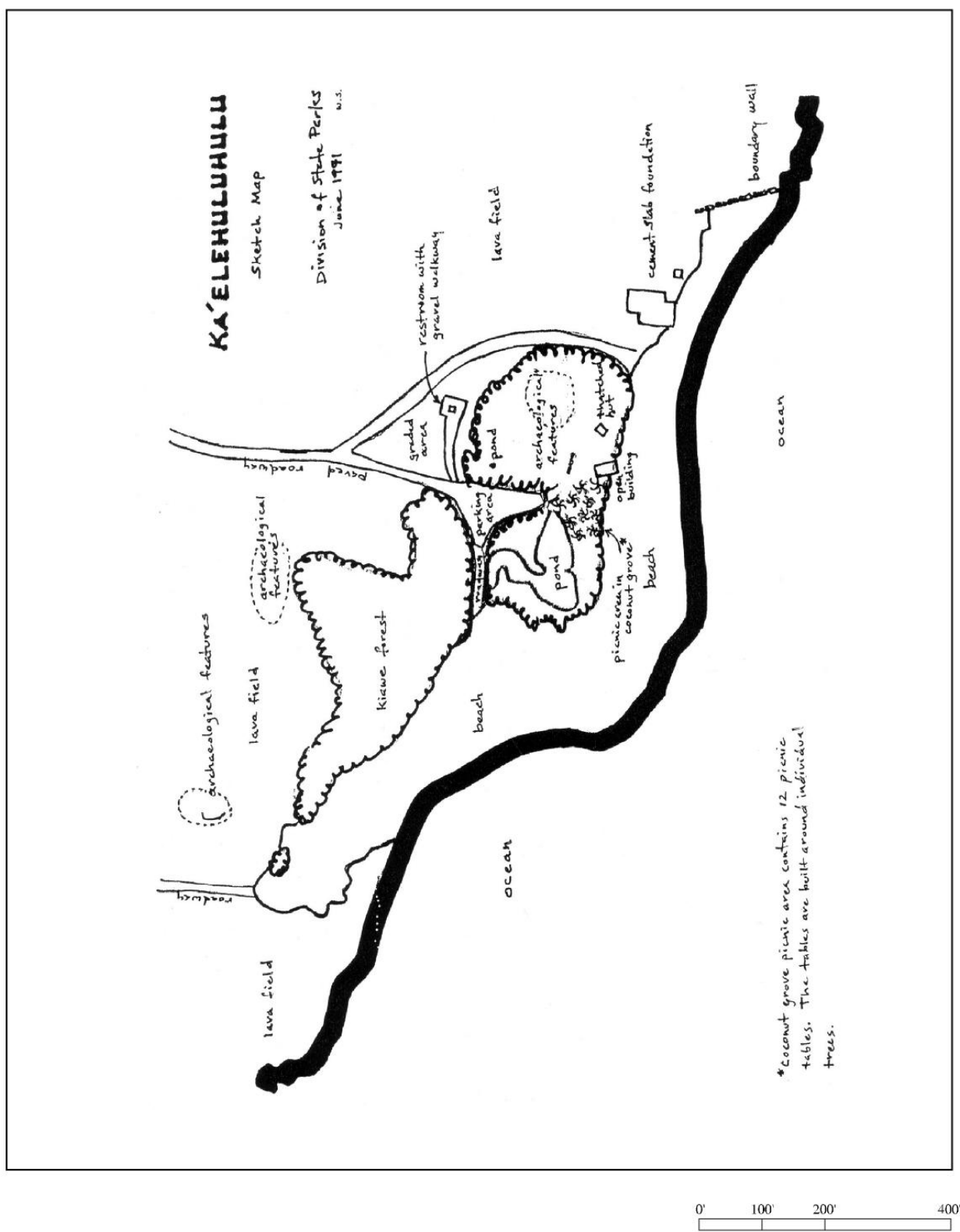
Kekaha Kai State Park

Magoon Estate

Figure 5-1

KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

Ka'elehuluhulu

Figure 5-2

5.4 HAZARDS

5.4.1 Natural Hazards

5.4.1.1 Flood Hazard

According to the Federal Insurance Rate Map (FIRM) Community Panel Number 55166 0466 C September 16, 1988 the coastal areas are in Zones AE and VE (Figure 5-3). The coastal VE zone directly fronting the ocean is generally 8 to 9 feet above mean sea level while just behind this area the AE zones range from 6 to 8 feet above mean sea level. The VE zones have the additional hazard of wave velocity added to the flood elevation. The width of this flood zone varies along the coast with bathymetry, topography and land surface friction. The widths range from 100 feet to 1,000 feet from the shoreline. Facility development within these zones should meet appropriate elevation and design standards for these districts. Coastal evacuation plans should be in place in the event of a hurricane, storm surge or tsunami.

5.4.1.2 Volcanic

The islands of Hawai'i are classified into four general zones for seismic hazard according to the uniform building code. "Three" represents the highest and "zero" the least. The entire island of Hawai'i is designated "three" in this classification. The U.S. Geological Service (USGS) has further classified the island of Hawai'i into nine hazard regions with zone one being areas of highest risk and nine being the lowest. The Hualālai region has been classified as zone four based on its eruptive history. Hualālai, the dominant volcano in the North Kona region has been dormant for 190 years. Its last eruption was the Puhiapele eruption of 1801. One of the flows from this eruption covered the area around the Kona Village and the other major flow covered the northern section of the Keāhole Airport up to Mahai'ula. The park area represents flows over many centuries which are in different stages of erosion and revegetation. Although Hualālai has not erupted in nearly 200 years, underground movement of the magma has caused numerous earthquakes from time to time. The largest recent quake associated with Hualālai was the 1929 quake which registered 6.5 on the Richter scale. While earthquake hazards do not appear imminent, historic records indicate a 62 year frequency for earthquakes of magnitude 6.4 on the Richter scale. While these times do not seem too frequent, it is well to remember that this is relative and these periods are very short on a geologic scale and it is difficult to determine the actual hazards associated with volcanic activity. Building locations and design will need to address these issues.

5.4.1.3 Lava Flows

Parts of the park include lava tubes with thin roofs that may collapse if stepped on. If people wander off trails into these barren areas there may be some danger of injury. This hazard is heightened where there are few people nearby or the site is inaccessible to emergency vehicles.

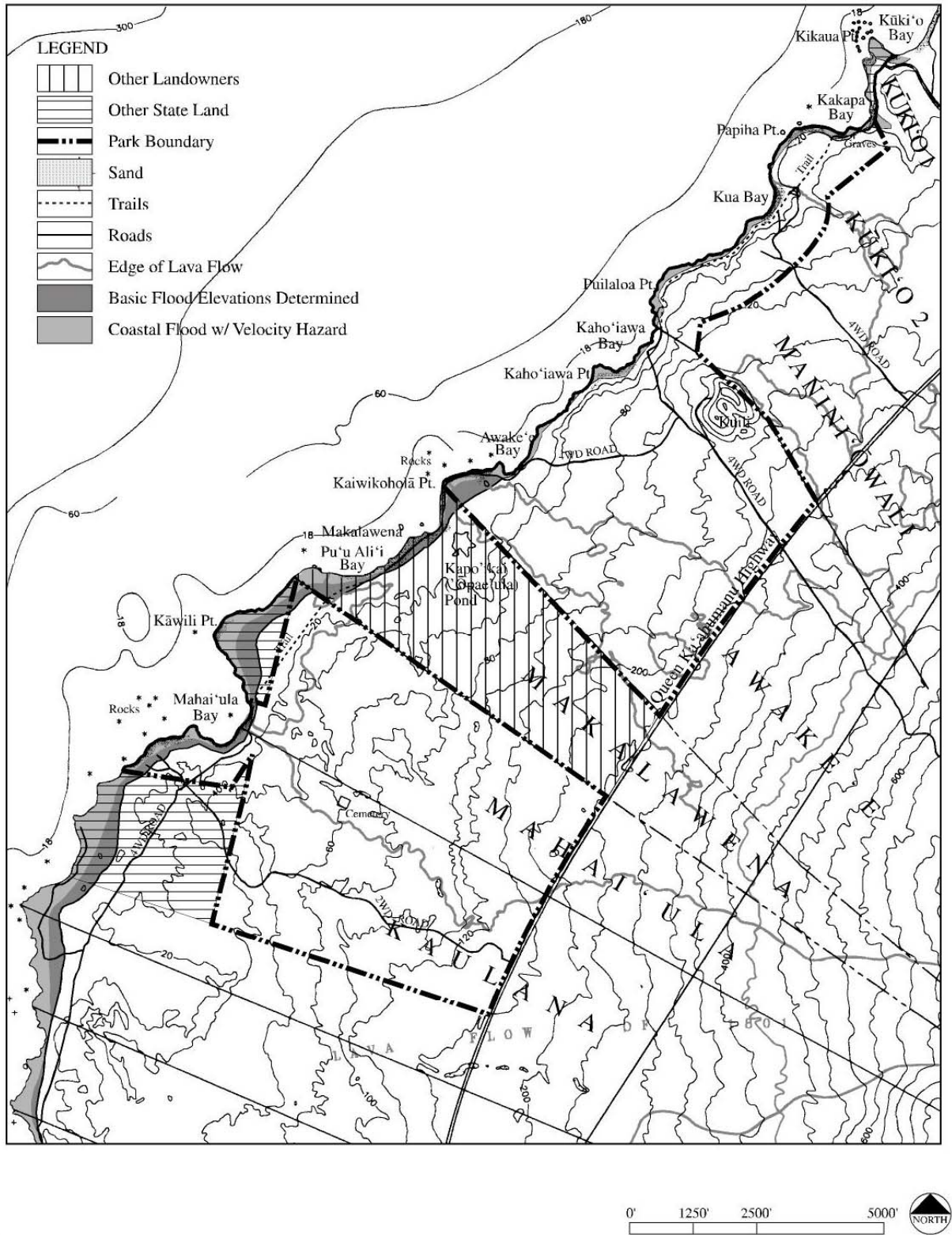
In addition, lava is often sharp, abrasive, hard to walk on, and wears out shoes. The dark unvegetated landscape absorbs heat and increases risks of heat stroke and dehydration.

5.4.1.4 Hot Arid Climate

Hiking in hot arid climates without potable water can be hazardous. Walkers may become overheated and develop heat stroke. Hikers should be cautioned to take necessary precautions to prevent overheating. In wilderness areas with poor access these emergencies can become very serious.

KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

Flood Zones

Figure 5-3

5.4.1.5 Ocean and Beaches

The ocean and beaches are the main attraction in coastal parks. However, they can also be places of danger. This danger is heightened in wilderness areas where people are scarce and emergency vehicles may take some time to arrive. Storm surge and high wave washes can be notoriously unpredictable in their patterns and create dangerous conditions. Currents can sometimes cause people to drift beyond their depth. Slips and falls along boulder beaches and jagged lava shorelines are common occurrences that can sometimes lead to serious injury.

5.4.1.6 Hazardous Plants and Animals

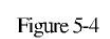
While Hawai'i has few native poisonous or venomous plants, or animals, some introduced and native species should be treated with caution. On land, scorpions, centipedes, wasps, and bees are the major outdoor hazards. In the water, Portuguese Man o' War, jellyfish, and other similar animals occasionally become problems. Sharks, eels, some sea urchins, and similar creatures need to be treated with caution when encountered.

5.4.2 Man-Made Hazards

5.4.2.1 Noise and AICUZ

According to the Air Installation Compatibility Use Zone (AICUZ) maps for Keāhole Airport the southwestern section of the Mahai'ula/Kaulana is in the noise contour portions of the AICUZ (Figure 5-4). Since this portion of the park is in the approach path to Keāhole Airport ground noise levels at parts of Ka'elehuluhulu are in the 65 LDn zone. Everything to the west/southwest of the Magoon/Ka'elemakule complex falls in the 55 LDn zone. While the park is not in the accident potential zone (APZ) of the airport and these levels are not hazardous to human health, 55 LDn or quieter is usually the preferred level for a residential subdivision. The noise does take away some of the wilderness character of the place.

• Park Development Report •



5.4.2.2 Fire

In hot arid climates, fires may start very quickly and burn large acreage of grasslands or forests. While the large patches of lava may limit the spread of the fire somewhat, the hazard remains significant. The danger is to ecosystems and natural resources as well as to people. Most fires are man-made through carelessness, ignorance or deliberate vandalism. A fire protection plan is an important emergency precaution for the park.

5.4.2.3 Other Man-Made Hazards

In the Mahai'ula area, some remnants of past habitation are potentially hazardous to park users. At the Magoon/Ka'elemakule complex water tanks, water lines, a derelict windmill and pump, abandoned pits, old buildings and smaller structures are potential hazards. Unless retained for interpretation purposes or repaired to utility, these structures should be targeted for removal. Volunteers and park personnel have completed some of this work.

5.5 CONSTRAINTS

Development of park facilities should be guided by several constraints. The constraints are related to the park concept and regional geography, and serve to guide the general development of support facilities in the park:

- Park facilities should be generally limited to one story in height and lower than tree height.
- Where practicable, construction materials should encourage the use of natural materials native to the Kona coast, or materials compatible to natural materials.
- Operational practices should minimize or avoid the use of outside resources such as imported fresh water or power from the utility grid.
- Systems and designs should avoid or minimize impacts on the natural environment.
- The carrying capacity of the resource is crucial and a monitoring program should be developed to ensure that the supporting infrastructure does not lead to a degradation of park resources. The assessment of the level of use will be an ongoing responsibility of the Department.
- Disruption to archaeological and historical sites will be avoided to the maximum extent possible.

The visual impact of facility development will be assessed early in the development process. View planes and important lines of sight will be preserved.

5.6 ADA GUIDELINES AND COMPLIANCE

Planning for Kekaha Kai State Park seeks to retain the natural wilderness quality of the land by keeping facility development to a minimum and keeping trails and roads in as natural a state as possible. Part of the strategy is to keep things unimproved to limit access and impacts as well as to retain the natural quality. ADA access policies and guidelines call for facilities to enhance accessibility. These objectives seem contradictory but park plans were developed with the idea of differing levels of accessibility. The Outdoor Recreation Design Guidelines for the State of Hawai'i identify three levels of accessibility for recreational facilities: accessible, challenge level 1 and challenge level 2. The following are definitions of the different levels of accessibility identified in the guidelines:

Accessible (Easy): All program services and facilities that are provided are fully accessible. These sites are designed for the most independent and easy use feasible for the majority of persons with disabilities. Generally, these sites are useable without assistance by all but the most severely disabled persons, and are in compliance with all applicable American with Disabilities Act Accessibility Guidelines (ADAAG) provisions.

KEKAHA KAI STATE PARK

• Park Development Report •

Challenge Level 1 (More Difficult): These sites have a greater degree of difficulty and are a more challenging experience than an accessible site. Parking, restrooms, visitor centers, and interpretive exhibits are all fully accessible. Grades and surface materials may be more challenging to persons with limited mobility. Some disabled users may need assistance.

Challenge level 2 (Most Difficult): These sites are indeed most difficult and offer a higher level of risk and challenges to all those seeking such experience. They are usable by the more athletic person with a disability without assistance but, generally, a person with limited mobility would probably need assistance. Severely disabled users would not be encouraged to use these sites without assistance. Physical improvements such as the grades and surfacing materials on trails are limited to preserve the natural surroundings, but with safety considerations designed into the site. Buildings, such as restrooms, are accessible.

Park plans shall identify all three levels of challenge for the park in greater detail: The visitor center gateway area of the park will be designed at the “accessible” category. The Education Center complex and the Ka‘elehuluhulu Beach core areas should have a “challenge level 1” designation and the connecting areas should be “challenge level 2”. The improvements are built incrementally as funding allows.

5.7 REGULATORY REQUIREMENTS

In addition to ADA requirements, the following regulatory requirements pertain to the development of the Park improvements.

Flood: The project sites are located in Zones AE and VE. Zones AE is an area where flood elevations are determined, while Zone VE is an area of coastal flooding with velocity hazard (wave action) and base flood elevations are determined. The proposed project must comply with rules and regulations of the National Flood Insurance Program and all applicable County Flood Ordinances.

Cultural Impact: Act 50, SLH 2000 requires an assessment of the project’s impacts on cultural practices.

Noise, Radiation and Indoor Air Quality: All project activities shall comply with the Administrative Rules of the Department of Health, Chapter 11-46, on “Community Noise Control”.

Wastewater Plans: All wastewater plans must conform to applicable provisions of the Department of Health’s Administrative Rules, Chapter 11-62, “Wastewater Systems”.

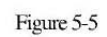
Dust Control: Construction activities must comply with provisions of Hawaii Administrative Rules, Chapter 11-60.1, “Air Pollution Control,” Section 11-60.1-33, Fugitive Dust.

Historic Preservation: The project will require approval under Chapter 6E-8 before it can be implemented.

Land Use Permits: The properties are situated within an area designed Conservation and / or Urban by the State Land Use Commission and zoned Open by the County. (Figures 5-5 and 5-6). A portion of TMK 7-3-43: Por. 1 is designated Urban by the State Land Use Commission, and zoned Industrial (MG-1a) by the County. Park improvements will be located in the portion of the property designated Conservation/Open. A Conservation District Use Permit will be required.

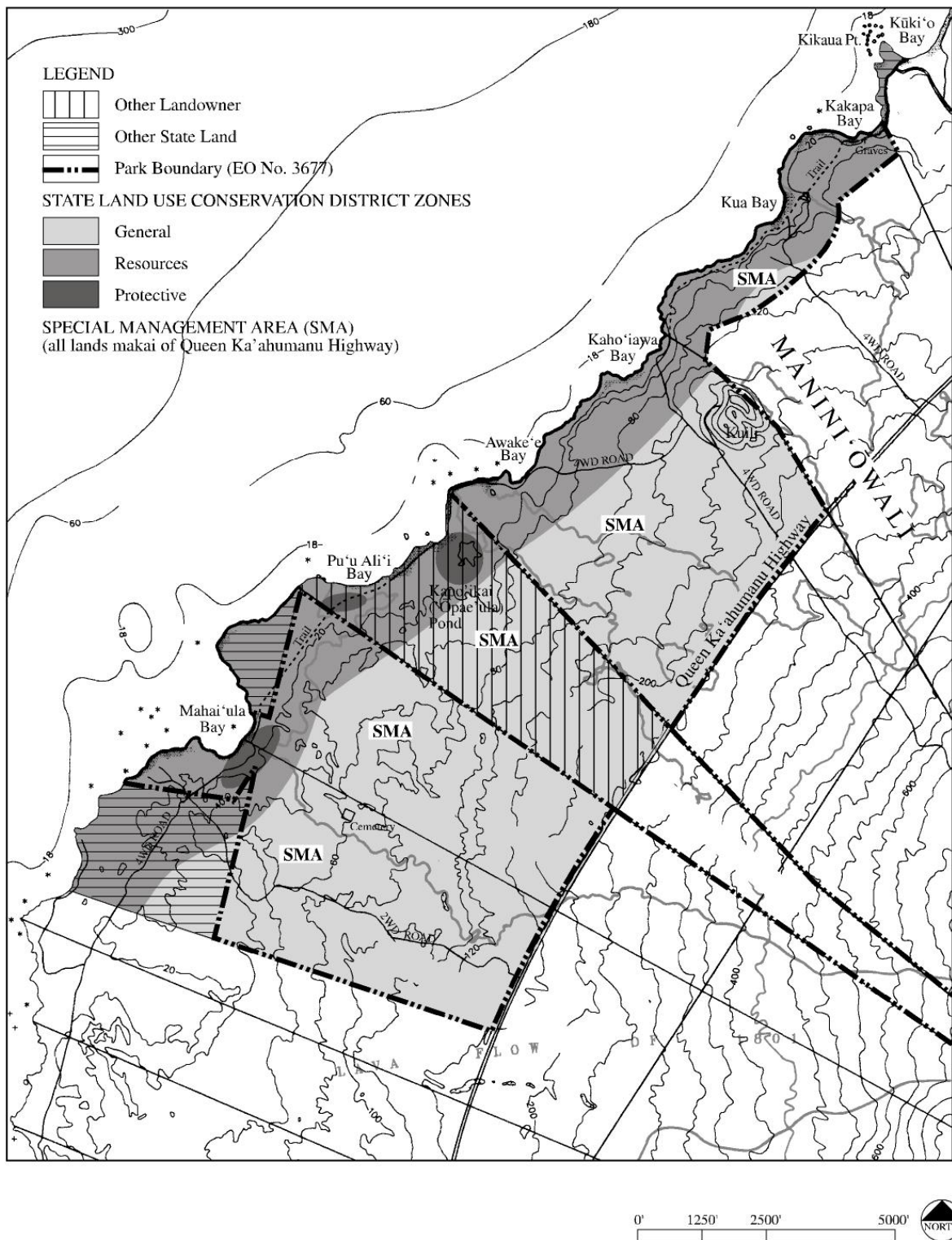
The properties are also situated within the County’s Special Management Area (SMA). Any development in the SMA must be consistent with the SMA guidelines set forth in Section 205A, HRS and the SMA guidelines contained in Planning Commission Rule 9. A SMA Major Use Permit will be required to construct the proposed improvements. A Shoreline Setback Variance may also be required depending on the type and location of the proposed improvements, as identified in Planning Commission Rule 8 and Planning Department Rule 11.

• Park Development Report •



KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

State Land Use Districts
and Special Management Areas

Figure 5-6

Section 6.0

PDR – Development Plan

6.0 DEVELOPMENT PLAN

The proposed development plan (Figure 6-1) is an extension of the Conceptual master plan adopted by the Board of Land and Natural Resources in 1998. The Conceptual Plan and subsequent concepts for this development plan is a result of many community meetings and discussions with resource people, agencies and the Kekaha Kai State Park Advisory Task Force. The initial Task Force completed its draft recommendations for the Mahai'ula Section in May 1996 and concluded their original mission during the summer of 1996. Their recommendations are included as Appendix J. Park planning for the Awake'e and Manini'owali sections was also begun in the 1996 Task Force meetings and continued until 2002. Notes from these meetings are included in Appendix J.

GENERAL DEVELOPMENT GUIDELINES

The following general guidelines apply to all sections of the Park.

Water: Water is scarce in Kekaha. There was general consensus among Task Force members to limit the availability of water in the park. The scarcity of water is a quality of the land that people must see as a base reality. As the people of old said, Kekaha *wai 'ole* (waterless Kekaha). Part of the identity of this park is the scarcity and wise use of water. There is no water infrastructure in the park at this time. The water plan should emphasize capture and wise use of existing sources.

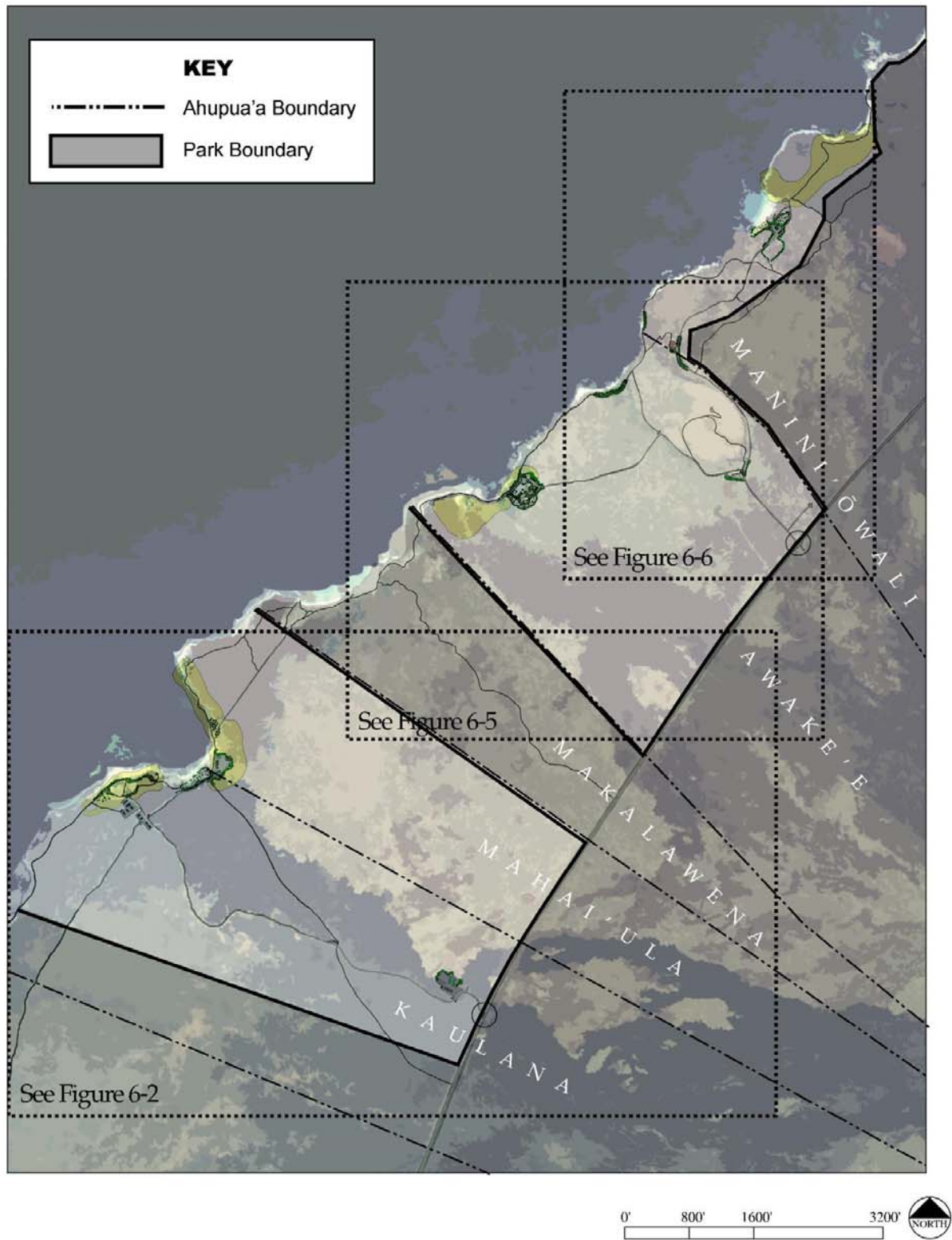
Potable Water: There will be no drinking water at Ka'elehuluhulu. Drinking water may be provided in the Activity Center buildings and the staff's residence. Drinking water will also be provided at the Visitor Center/park headquarters. In all places where it is provided at Mahai'ula, the water may be trucked in. No water will be provided in Awake'e. In Manini'owali, access will be provided to the water system at the Kūki'o development. This will be the only area where potable water will not have to be trucked in.

Brackish Water: The use of brackish water sources is compatible with arid climates. Kekaha is no exception. Brackish water in the park will come primarily from two sources: brackish wells, springs and ponds or catchments systems. The park should utilize both. Wind and solar energy should be used to power any equipment that may be needed for the system. Shallow brackish wells may be dug. Previous studies about water sources at Makalawena indicate that there is a thin basal lens about one to two feet above sea level. The salinity ranges roughly from 3 to 6 parts per thousand. This is sufficient to sustain plants which have adjusted to this climate. The people of old were ingenious in the way they used catchments systems. This concept should be resurrected at Kekaha Kai. Buildings and site plans should maximize the amount of catchment that is retained.

Where shower water is provided, except for the staff residence, it will be from brackish water sources. While the landscaping will be a xeriscape it will still be necessary to irrigate a little in the grow-in period. Also, periodic irrigation is helpful even for dryland plants; especially until they mature. Irrigation water will all come from brackish water sources. The brackish water sources can also be used for fire protection.

KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

Development Plan Overview

Figure 6-1

KEKAHA KAI STATE PARK

• Park Development Report •

Landscaping

The landscape of Kekaha is dry. The vegetation is predominantly coastal dryland species with a mix of wetland sedges and strand vegetation. The following summarizes the general landscape policies of the Park.

- Show a preference for endemic, indigenous and Polynesian introductions: Native dryland species should be highlighted. Well known trees such as *'iliahi*, *wiliwili* and *'ōhi'a* should be included. Bushes such as *maiapilo*, *naio*, *noni* and *a'ali'i* should be part of the landscape palette. Beach strand vegetation such as *pōhuehue* and *pau o Hi'iaka* should be included. Where there are brackish water sources, *milo* and coconuts would be appropriate. A complete list should be developed in consultation with ethnobotanists, educators and the community. Some exceptions to this policy should be allowed for long established trees such as *kiawe* and beach heliotrope which provide valuable functions and have their own history in the islands.
- Predominantly Xeriscape: This is a corollary to the first point. Plants should be xeriscape and salt tolerant. They should “belong” in this landscape. Otherwise they would not look natural. This trait also reduces irrigation and maintenance costs.
- Eradication of Alien Species: While the previous paragraphs discuss enhancement and plantings, this policy focuses on eradication of weedy species. The 1801 flow is still relatively clear of vegetation and there is a chance that the introduced fountain grass can be controlled on this section of the park. These efforts support several basic values. First, it would contain and limit an introduced weed. Second, it would preserve the character of the 1801 flow. Finally, by limiting the competition from an aggressive foreign species it allows traditional native species such as *noni*, *maiapilo*, *pili* and *'ōhi'a* a greater chance to colonize the flow and other areas that are cleared.
- Enhance the Recreational Values of Kekaha Kai State Park: In Kekaha, plants provide shade from the hot sun and comfortable microclimates. They create variety in the landscape and aesthetically soften the land. They make the harsh arid landscape inviting by creating a cooler contrast. They enhance picnic areas and are generally pleasing to the eye. The recreational value of this coastline is greatly enhanced by the available vegetation. The landscape plan will eliminate unwanted weedy species and enhance desirable ones. Better recreational areas will be created, thereby increasing both the quality and quantity of the spaces available for recreational purposes.

New Facilities and Infrastructure

In general, construction within the park should be limited and small in scale in keeping with the natural wilderness focus of the park. Color, design and material should seek to blend buildings into the natural setting. They should be sited in clusters to minimize their visual and physical impacts. Site planning should incorporate the natural topography as much as possible to minimize grading. The following guidelines generally apply:

- Facilities will be developed before the need develops.
- They will be developed as funding allows.
- Staff support will be sufficient to upkeep and maintain the facilities.
- The technology will be appropriate for the expected demand.
- The construction and operation will not have a negative impact on the environment.

The concept of sustainability will guide the type and equipment that is selected. Restroom facilities should be made of materials and colors that blend into the natural scenery as much as possible. Structures should be designed to merge into the landscape and vegetation.

KEKAHA KAI STATE PARK

• Park Development Report •

Power requirements will be evaluated for each facility. Sources that are naturally available such as solar and wind will be the suggested sources unless economic, technical or environmental reasons dictate otherwise. A portable generator should be available for emergency and backup purposes.

Telecommunications will be via wireless systems. Cellular phones and small satellite dishes are recommended. In the future, satellite linkage may be pursued such that some of the educational and cultural activities and events from the activity center may be linked to educational program networks around the world.

Trails

Trails are a major part of Kekaha Kai. A coastal trail will run through Kekaha Kai State Park, linking all the *ahupua'a* associated with the park. The shoreline trail will provide public access across private land at Makalawena. The coastal trail through Kekaha Kai State Park may become a section of the Ala Kahakai Trail which is part of a 175-mile National Historic Trail. The trail itself will be a means of access, and a recreational and interpretive resource. The trail will continue to provide access to ocean recreation opportunities and fishing/gathering sites in coastal areas and near shore waters.

Mauka-makai trails are located in each *ahupua'a* and these will be highlighted. They will be identified and rebuilt as necessary. Where alignments of historic trails are uncertain new connections will be developed and recorded properly.

It is the policy of the Division of State Parks to generally use existing historic and pre-contact trails and rehabilitate them so they are useable today to retain their original trail functions. New trail construction will use historic trail building designs and techniques as much as practicable. A more detailed Trail Management Plan is presented in Chapter 7. The purpose of the trail plan is to:

- Provide public access to the resources of the park for recreational, educational and cultural purposes.
- Provide an opportunity for the public to understand and appreciate various natural and cultural features along the coast while protecting these features and their environment.
- Monitor and control public use and alleviate public health and safety concerns.
- Coordinate government agency, landowner/manager and community interests including native Hawaiian interests, in the management of the trail corridor.
- Preserve historic trails.

ADA Access

The Americans with Disabilities Act requires facilities to be accessible to people with disabilities. Parks are included in HRS103-50 and must comply with ADA guidelines. The level of compliance is to the "maximum extent feasible". The meaning of this phrase continues to evolve over the years. Development plans for Kekaha Kai will conform to the guidelines established in Hawaii Administrative Rules Title 11, chapter 219 and the Final Report: Recommendations for Accessibility Guidelines: Outdoor Developed Areas developed by the U.S. Architectural and Transportations Barriers Compliance Board in September 1999. The report provides extensive detail on trail types, limitations and design

Generally, the following guidelines will be applied and highlight some of the policy directions for Kekaha Kai State Park:

- All day use areas and major activity areas will have one or more accessible paths from parking areas. Facilities at Day use areas including picnic tables, utility sinks, grills and trash containers will meet Americans with Disabilities Act Accessibility Guidelines (ADAAG).

KEKAHA KAI STATE PARK

• Park Development Report •

- Overlooks and viewing areas will be designed for accessibility. Viewing equipment placement and design will comply with ADAAG.
- All designated parking areas will have Handicapped stalls with appropriate signage based on current ADA regulations.
- At least a portion of all designated camping areas will be accessible from the adjacent parking area. A portion of all camp sites will be surfaced and designed to accommodate wheelchairs and other handicapped requirements.
- New restroom facilities will all have ADA accessible approaches, floors and improvements. Restroom facilities will all have one or more handicapped stalls. New restroom facilities will all have ADA accessible approaches, floors and improvements. Restroom facilities will all have one or more handicapped stalls.
- There will be at least one, if not more accessible routes to the major beaches in the Park from the nearest parking area. This includes: Ka'elehuluhulu, Mahai'ula' Awake'e and Kua Bay. Surface type and route will be developed on a case by case basis.
- Paths to interpretive areas will be made ADA accessible to the maximum extent practicable. While not all sections may be accessible due to limitations of terrain or potential alteration of the features since most interpretive features are within close proximity to high traffic areas, these areas will be made accessible to the maximum extent feasible.
- A portion of all trails will be made accessible. As a "wilderness" park it is understood that not all areas will be accessible. However, every effort will be made to include portions close to activity areas, significant features and resources into the network of accessible pathways. These portions will comply with ADAAG.
- Signage will inform people of accessible routes and facilities.

Facilities for handicapped accessibility will be developed incrementally with the rest of Park development. Availability of funding will determine the speed with which these improvements will be developed. New activity areas will be opened when there are sufficient management resources to maintain the facility.

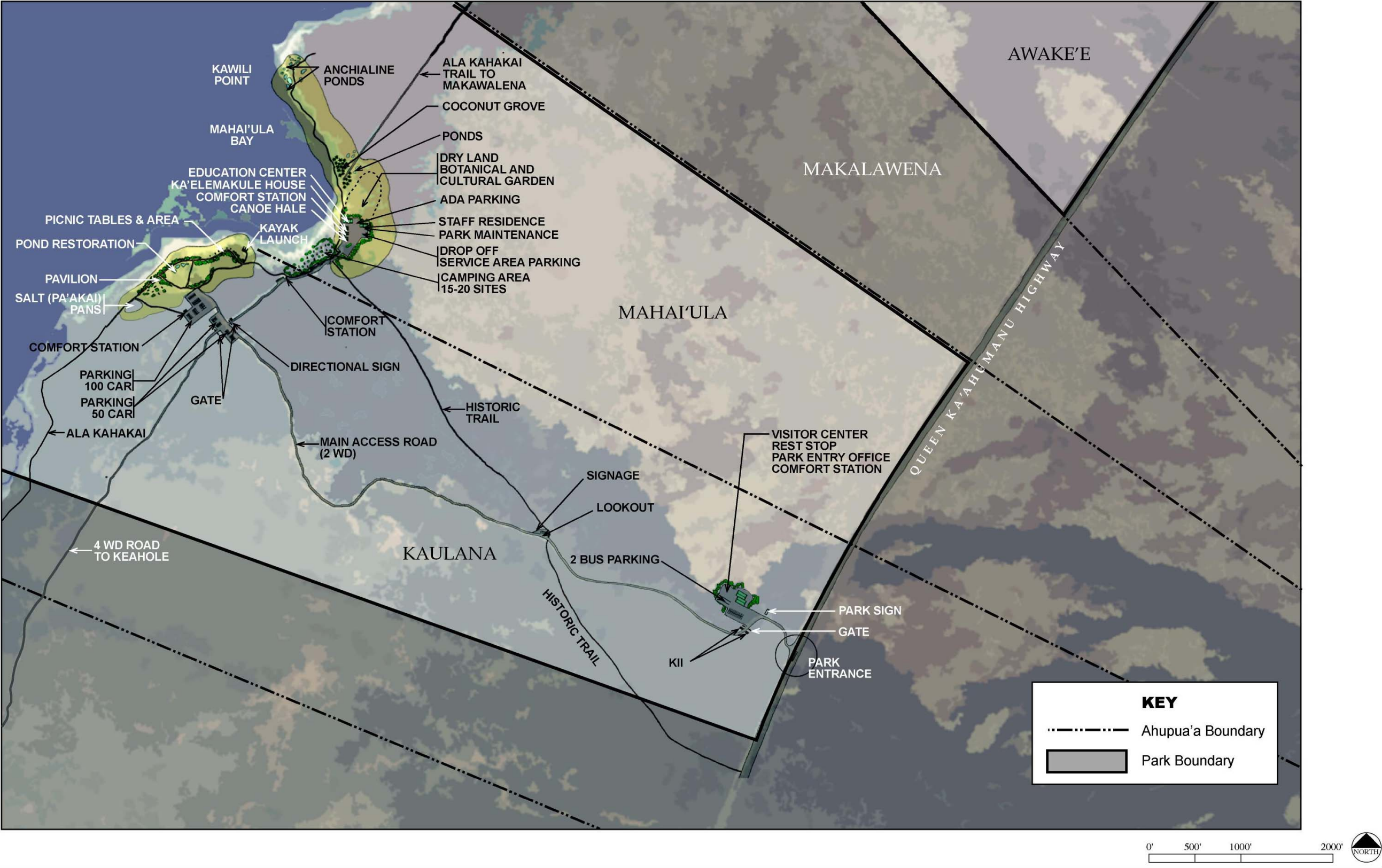
6.1. MAHAI'ULA / KAULANA SECTION

The Conceptual Plan identified the Mahai'ula/Kaulana section for the highest level of use in the Park. In recent months there has been some suggestions that the Manini'owali section receive the highest level of use because of the paved road and adjacent residential development. However, the natural resources at Manini'owali are smaller and the space available for Park development is more limited. The beaches at Mahai'ula and Ka'elehuluhulu are permanent and larger. Parking areas are larger and located in places where archaeological and cultural resources can be more easily avoided.

The project development plan for Mahai'ula/Kaulana is shown in Figure 6-2. Within the Mahai'ula/Kaulana section there are six subsections. 1) Entrance/Visitor Center, 2) Open Lands: 1801 Flow and Grasslands, 3) Kāwili Point and Coastal Open Lands, 4) Ka'elehuluhulu, 5) Mahai'ula, and 6) Marine/Aquatic Components. Each of these subsections represents a distinct combination of natural and cultural resources, and park visitors will utilize each in a different way. Within each subsection are several distinct natural resources and planned man-made improvements. While several of these park subsections have varying levels of proposed development, others will be maintained as undeveloped open space to preserve scenic view corridors and the natural wilderness setting.

KEKAHA KAI STATE PARK

• Park Development Report •



Kekaha Kai State Park

Development Plan - Mahai'ula

Figure 6-2

6.1.1. Entrance/Visitor Center Subsection

Entryway Improvements

The highway entrance to the park has been improved. Additional improvements should be considered. The pavement widths and shoulders should be expanded to provide more space free flowing traffic in both directions. The left turn storage lane should be complemented with a deceleration lane in the southbound direction. The slope of the road off the highway should be made more gradual and the pavement width widened.

The gate to Mahai'ula will be the main entrance to the park. It is important both symbolically and functionally. Materials and designs used in the gate area should use local materials where practical and be compatible with the surrounding landscape. The signage at the gateway should also follow these guidelines.

Visitor Center/Museum

Located at the entry to the park, the visitor center will be the major interpretive facility of the park. The location of the structure at the park entry will encourage visitors to stop and receive an orientation prior to their visit. By placing the structure on the slopes at the *mauka* edge of the park, the scenic view corridors can be incorporated into this orientation of the park and the larger Kekaha region. The architecture should be integrated into the landscape.

The primary purpose of this facility is to orient visitors to the natural and cultural history of the Kekaha region of North Kona. Through such interpretive techniques as audio-visual presentations, interpretive talks, exhibits, and demonstrations, the visitor will gain a greater understanding and awareness of this dry, leeward environment on the island of Hawai'i and the people who lived here. Additional information will assist the visitor in planning their visit to North Kona and South Koholā, including maps and various recreational opportunities

The visitor center should be designed and programmed to be a regional visitor center. It should orient the visitor to Kekaha Kai State Park and the entire West Hawai'i region. Its architecture should reflect the regional culture and geology in design and use of materials. The structure should integrate harmoniously and blend naturally into the surrounding setting. It should be a *kipuka* in the lava flow of the site. The center should include the following:

- An Administrative/Enforcement Center for the overall Park;
- A small commercial area providing refreshments, and the sale of maps, postcards, some crafts and memorabilia;
- Orientation and display area to the recreational resources in the region. Parks, environmental and cultural resources should be mapped and identified. Landmarks and visitor attractions of the region should be highlighted.
- Restrooms sufficient to accommodate buses traveling up and down the coast should be developed. Restrooms would also serve people going down to the shoreline area and FIT (free independent traveler) traffic along Queen Ka'ahumanu Highway.

6.1.1. Entrance/Visitor Center Subsection

Entryway Improvements

The highway entrance to the park has been improved. Additional improvements should be considered. The pavement widths and shoulders should be expanded to provide more space free flowing traffic in both directions. The left turn storage lane should be complemented with a deceleration lane in the southbound

KEKAHA KAI STATE PARK

• Park Development Report •

direction. The slope of the road off the highway should be made more gradual and the pavement width widened.

The gate to Mahai'ula will be the main entrance to the park. It is important both symbolically and functionally. Materials and designs used in the gate area should use local materials where practical and be compatible with the surrounding landscape. The signage at the gateway should also follow these guidelines.

Visitor Center/Museum

Located at the entry to the park, the visitor center will be the major interpretive facility of the park. The location of the structure at the park entry will encourage visitors to stop and receive an orientation prior to their visit. By placing the structure on the slopes at the *mauka* edge of the park, the scenic view corridors can be incorporated into this orientation of the park and the larger Kekaha region. The architecture should be integrated into the landscape.

The primary purpose of this facility is to orient visitors to the natural and cultural history of Kekaha region of North Kona. Through such interpretive techniques as audio-visual presentations, interpretive talks, exhibits, and demonstrations, the visitor will gain a greater understanding and awareness of this dry, leeward environment on the island of Hawai'i and the people who lived here. Additional information will assist the visitor in planning their visit to North Kona and South Koholā, including maps and various recreational opportunities.

The visitor center should be designed and programmed to be a regional visitor center. It should orient the visitor to Kekaha Kai State Park and the entire West Hawai'i region. Its architecture should reflect the regional culture and geology in design and use of materials. The structure should integrate harmoniously and blend naturally into the surrounding setting. It should be a *kipuka* in the lava flow of the site. The center should include the following:

- An Administrative/Enforcement Center for the overall Park;
- A small commercial area providing refreshments, and the sale of maps, postcards, some crafts and memorabilia;
- Orientation and display area to the recreational resources in the region. Parks, environmental and cultural resources should be mapped and identified. Landmarks and visitor attractions of the region should be highlighted.
- Restrooms sufficient to accommodate buses traveling up and down the coast should be developed. Restrooms would also serve people going down to the shoreline area and FIT (free independent traveler) traffic along Queen Ka'ahumanu Highway.

Museum: A museum should be developed to house artifacts collected in the region. There has been much development in West Hawai'i over the last two decades and in the process much archaeological work has been conducted and many items and information of historical and cultural interest have been unearthed. These items are scattered in various places; including warehouses and miscellaneous offices and houses. There is no unified plan or place to display them and this resource is essentially dormant. Although the vision is ambitious, the visitor center museum could become a repository for artifacts from the region. Its full development will be dependent on the degree of public and private support. The facility should be developed incrementally and designed for future expansion as resource needs and financial support develop.

KEKAHA KAI STATE PARK

• Park Development Report •

Park Maintenance

The Park Maintenance Baseyard should be relocated to this site when the Visitor Center/Museum is constructed. This location is more central to the overall park and would have easy access to the freeway for deliveries and other transportation needs.

Park maintenance facilities should be designed as a “back of house” function with the Visitor Center as the front of house. These facilities are usually not attractive and walls and landscaping should be used to soften, mask and mitigate its visual character. Site location should literally place it back of the Visitor Center. In the interim, the maintenance base for the Park should remain at Mahai’ula by the Bay.

Parking and Wayside

The parking lot for the area will serve multiple functions. First, it will accommodate people driving along the highway who want a rest stop wayside and a regional information center. Second, it will provide spaces for cars and buses with passengers visiting the center itself. These people would use restrooms, see displays, stop for orientation programs or attend classes. Third, it will serve as a terminus for people who will hike the trails in the area. Finally, it will accommodate people who may engage in traditional practices. Parking should accommodate stalls for at least two school buses and twenty five cars in addition to staff parking. This complex should be paved, and fully ADA accessible.

Utilities

A brackish well should be considered to provide a source for irrigation and grey water uses such as toilets. Package treatment plants such as living machines should be considered along with traditional septic tank and leach-field systems. Freshwater should be trucked in for drinking purposes. Building design and site design should utilize catchments and detention systems. A package wastewater treatment plant should be developed with a contained effluent reuse system. Power will be drawn from the transmission line running parallel to the highway on the *mauka* side. Site grading for the complex should result in ground conditions that will facilitate the growth of plants.

Landscaping

Landscaping at this site should be developed with a *kipuka* concept using xeriscape material and practices.

6.1.2 Lava Field Subsection

Structures are not proposed in the central portion of Mahai’ula between the highway and the shoreline. Much of this area is covered by the 1801 lava flow which promotes the feeling of open space and wilderness.

Viewing Pullovers

A viewing site should be graded along the side of the access road about a third of the way down to the beach and possibly one or two more locations. Several points of interest can be highlighted from these pullovers such as Pu’u Kuili to the north and Hualālai to the east. At these pullovers, interpretive signs can be used to interpret the 1801 lava flow, including the dynamics of a *pāhoehoe* flow, the associations with Kamehameha I and the goddess Pele, and the succession of vegetation on a lava flow. The dryland plant community, consisting largely of bunch grasses on the lava flow, can also be interpreted on *makai* side where colonization of the lava is noticeable.

A fountain grass eradication program should be considered from the access road since the barren lava has limited the progress of this invasive species. From this location, the task is partially manageable. In pockets where grasses have grown, native grasses such as *pili* should be considered as a way preempting reintroduction by invasive alien species.

Interpretive Trail

KEKAHA KAI STATE PARK

• Park Development Report •

The *mauka-makai* historic trail traverses the 1801 lava flow from the shoreline to the highway. A sign kiosk at the *makai* trailhead is proposed. Because the foot trail is only a worn, discolored alignment over the *pāhoehoe* flow, it is often difficult to follow. Therefore, it is recommended that *ahu* be constructed along the trail as markers. The petroglyph cluster at the *mauka* end of the trail needs to be monitored regularly for impacts from visitor traffic. This trail offers an opportunity to experience the lava flow, the plant communities, and the cultural history associated with this landscape.

Resource Reserves-Ka'elemakule Cemetery (Kolomikimiki)

This site was transferred to the Catholic Diocese and is technically not part of the park. In respect for the nature of the site, there will be no signs or markers denoting the location of the site. However, a small, unobtrusive sign at the site is recommended to inform the inadvertent visitor that this site is not public and they should not enter the walled enclosure.

6.1.3 Kāwili Point Subsection

Interpretive Area

The Kāwili Point archaeological sites comprise a well-preserved complex of platforms and walled enclosures related to the settlement of this leeward shoreline. An archaeological map of this complex has been drafted but no excavations have been conducted which would provide additional information about the occupation of these sites. An interpretive trail beginning at the coconut grove of Keawehala would utilize the historic trail running through the complex toward the point. An interpretive sign kiosk at the joint trailhead for the Kāwili Point trail and jeep trail would introduce the visitor to both trails, including the themes of fishing and shoreline habitation. A self-guided brochure for the complex would discuss selected sites. In program related activities, this trail would also be used for guided tours. This area and the area including the Magoon/Ka'elemakule complex should be designated as an interpretive area.

Trails

The trail to Makalawena begins at Keawehala. When this trail crosses over into Makalawena it presently goes over the dunes at Pu'u Ali'i Beach. A dune pocket vegetated with *kiawe* and *pōhuehue* forms an attractive microclimate in this field of lava just before the beach. This is a sensitive archaeological area. Coordination with Kamehameha Schools is needed to re-direct the trail to avoid negatively impacting this area. Signage and boardwalks along with realignment of the road should be considered. A *makai* realignment would bring it closer to an earlier coastal trail that is rarely used.

The coastal trail along Kāwili Point should be restored to provide an alternate path to Makalawena and also improve access to Kāwili Point.

Outdoor Classroom

Keawehala would serve as an outdoor classroom location for the educational programs operated out of the Education Center. From this locale, students and visitors can be given an orientation to the Kāwili Point Complex and the resources in the adjacent lava field.

There are significant anchialine ponds at both Keawehala and Kāwili Point. These ponds are readily accessible as outdoor classrooms to illustrate the formation of these features and the aquatic life within them. Their use by native Hawaiians could also be highlighted.

At Kāwili Point and the area north of the Education Center are 2 distinct flows that can be used to illustrate the difference between 'a'ā and *pāhoehoe* flows, the ages of different flows, the creation of *kīpuka*, the succession of plant growth on flows, and some of the features associated with these different types of lava.

Historic Water Sources

KEKAHA KAI STATE PARK

• Park Development Report •

At Keawehala, there are several historic features related to gathering and transporting water to the houses at Mahai'ula, including the wells, windmill, pump and water tank. Those that can be retrieved should be restored and used as part of the outdoor classroom concept. They represent older methods of using renewable resources. These could be added to newer technologies used in the restoration and development of the education center complex to teach sustainable methods of life in arid leeward climates. These facilities could also be re-developed to provide brackish water for non-potable uses such as irrigation and washing.

6.1.4 Ka'elehuluhulu

The Ka'elehuluhulu area begins at the crossroads intersection to Mahai'ula.

Crossroads

The existing parking area at this intersection should be improved to a 50 car parking area. The parking lots should be an unstriped level graded area in keeping with the natural character of the park. Signage should indicate major features and destinations.

A visitor orientation kiosk is planned here. It will be an unmanned structure with a detailed map of this section of the park. Photos and text will highlight points of interest and suggested paths. Restrooms and parking locations will be identified.

A locked chain will control vehicular access to the Mahai'ula direction. The Keāhole access road should also be gated but remain unlocked to accommodate area fishermen. All facilities such as kiosks must be ADA accessible.

Restrooms

Vault toilets have been recently developed at Ka'elehuluhulu. Comfort stations equipped with eco-friendly self-composting toilets should be considered when additional restrooms are considered. These may be composting toilets or some other design that minimizes or eliminates water use and ground water contamination. New comfort stations should be ADA accessible from the parking lot and designed to blend into the grove of trees.

Parking

The parking lot at Ka'elehuluhulu should be a 100 car facility. The lot should be framed by walls made of local materials to control the number of cars. The site is large enough for expansion during special events that may require some overflow space. These overflow areas should be mildly graded and specifically designed as future expansion areas as needed. These areas should be chained off and only opened during such events. On a normal basis, the 100-car limit should be maintained. A small section of this parking area should be paved with handicapped stalls. A paved pathway should be developed from the parking lot to the comfort stations.

KEKAHA KAI STATE PARK

• Park Development Report •

Day Use Area

The day use area will focus around the beach and remnant pond area. The paved pathway from the parking lot will be ADA accessible. This area has coconut trees, *milo* and *kiawe* cover. Additional day use facilities proposed include a pavilion or shelter within the expanded landscape area. There will also be additional picnic benches and tables, barbecue grills and trash containers.

A kayak launching site has been designated at the Mahai'ula edge of Ka'elehuluhulu Beach. This site will be used by individual kayakers and is not for commercial operations. Commercial kayak operations are not allowed in the Park. The path to the kayak launch area will be ADA accessible.

Landscape

Ka'elehuluhulu will remain the most extensively used area of the park. Additional landscaping could be planted in this area. Plant material will include: *milo*, *kou*, coconut palms, *loulou*, and *hala*. Some later introductions such as *kiawe*, ironwood and beach heliotrope which have become naturalized in the area will be used in conjunction with native species and Polynesian introductions. This emphasis on native plants would be carried out throughout the landscaping plan through the shrub and vine levels and on into the wetlands around the ponds.

Interpretive Sign Kiosk

Signs are proposed at Ka'elehuluhulu to 1) orient visitors to the features of the park, 2) heighten visitor awareness about the natural and cultural resources and the opportunities available to learn more about these resources, and 3) inform visitors of the park rules and hazards (safety concerns). A sign kiosk shelter consisting of several interpretive signs is proposed at a central location by the parking lot and pond where it is readily accessible and visible to visitors getting out of their vehicles and walking to the beach. Themes and resources to be highlighted on these signs include:

Ka'elehuluhulu – The Significance of the Name: This place name translates as frayed hull and refers to the canoes being dragged over the rocks at low tide.

A Changing Landscape – The Covering of Pa'aiea Fishpond by Lava: Much of the fishpond was covered by the 1801 lava flow but a remnant is believed to still exist as the pond at Ka'elehuluhulu. Located just inland of the shoreline, the pond is being silted in by decaying vegetation and deposition during periods of high surf. Today, the pond is a water bird habitat and contains several wetland plants, including *makaloa* and *ākulikuli*. Restoration of the pond for interpretive purposes is being considered and the work has been initiated by Sea Grant staff on the island.

Salt for Drying Fish: The historic period salt works at the southern end of Ka'elehuluhulu beach consist of concrete slabs divided and terraced by low concrete walls. Saltwater would be piped to these low walled enclosures where the water would evaporate leaving the salt crystals. Gravity and the sun provided the energy for this system. With fishing being the major economic and subsistence activity along this shoreline, drying and salting was necessary to preserve the fish until it could be taken to market in Kailua town or to Kawaihae for shipping to Honolulu.

Resource Preserves

Petroglyphs. A complex of *papamū*, historic name petroglyphs, and midden scatters exists on the lava flow behind the *kiawe mauka* of Ka'elehuluhulu beach. This site has future research potential and the current practice of “coral graffiti” needs to be discouraged in this site area.

Enclosure. This imposing structure on the lava flow at the north end of Ka'elehuluhulu beach should be stabilized and managed for visitor impact. Possible burials are associated with this site which may require additional protection.

KEKAHA KAI STATE PARK

• Park Development Report •

The effect of the 1946 tsunami is still evident in this area and signage of this event could be placed at the parking area at the edge of this preserve. Stories of shipwrecks may also be a compatible theme.

6.1.5 Mahai'ula

This name conjures up memories of an earlier, slower and more gracious era for Kona. It is the name by which kama'āina identify this part of the Park.

Interpretive Education Center

This interpretive facility will encompass the complex of structures at Mahai'ula Bay, including the renovated Magoon House, the Ka'elemakule House slated for future renovation, a warehouse building, and the reestablishment of the canoe *hālau*. This facility will highlight the natural and cultural history of the Mahai'ula and Kaulana *ahupua'a* through exhibits and hands-on educational experiences. This facility will cater to special groups on a pre-arranged basis, such as school classes and educational organizations. However, the facility will not exclude other visitors when not in use by these groups.

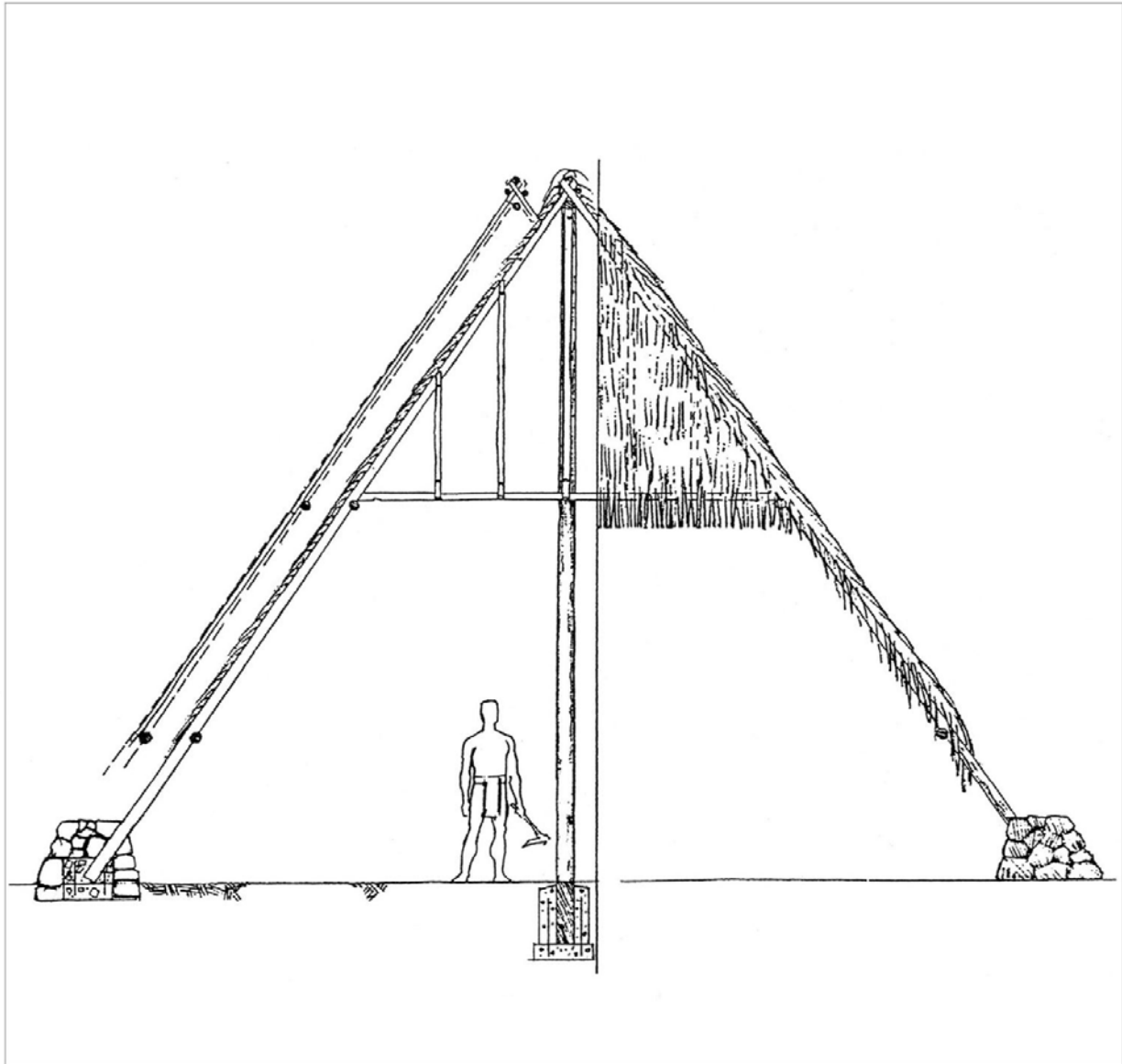
The former Magoon House, constructed in the 1930s, is a 2-story structure that may be renovated for use as an interpretive education center while maintaining the building as an example of period architecture and the general ambience of Kona. Within the facility will be a small auditorium area for interpretive talks and audio-visual presentations. A second space will be devoted to hands-on displays where children and others can learn first-hand about the marine life of Mahai'ula Bay and the coastal anchialine ponds. Outside the facility will be the tanks and wet labs which will expand upon the hands-on experience. The programs offered at this facility will be coordinated with the Division of Aquatic Resources and the Sea Grant Extension Service.

The former Ka'elemakule House, constructed in the late 1800s, is a single story structure that is scheduled for future renovation as a Hawaiian Cultural Center. This facility will highlight the cultural history of Mahai'ula/Kaulana from prehistoric settlement until the 1940s. Graphic displays and exhibits with artifacts and replicas will cover such themes as fishing technology, food preparation, domestic tools, games such as *kōnane*, and appropriate arts and crafts as well as a small display on the videos incorporating oral history interviews with the *kūpuna* and hands-on workshops.

The warehouse structure is a wooden structure on a concrete slab with large sliding doors and a window on the south side. The large open space is divided into 2 rooms by a central wall. One room will be used as the interpretive headquarters and office for the staff running the educational programs. This space may also operate as an information center for park visitors and a meeting place for guided tours and other organized activities. The second room is designated for storage.

A wooden canoe *hālau* structure located *makai* of the Ka'elemakule House was dismantled by park personnel for safety reasons. A traditional canoe *hālau* constructed with 'ōhi'a poles and *pili* thatching is proposed along the shoreline in the same general area. A canoe would be kept in the *hālau* as in interpretive exhibit. At this location, the themes of canoe building, navigation, fishing, and shoreline travel will be presented (Figure 6-3).

The construction of an open *hālau* structure is proposed atop the existing large stone platform to the north the Magoon house structure. This rock-filled platform measures approximately 75 feet by 50 feet and could support a pole and thatch structure that is in keeping with the nature of the Hawaiian Cultural Center. This *hālau* would be used for demonstrations, groups' orientation gatherings, and special events. One suggestion is to hold a *kōnane* tournament since so many *papamū* are located in the park area.



KEKAHA KAI STATE PARK

• Park Development Report •

Outdoor Classroom

Closely associated with these facilities is the concept of the park as an outdoor classroom. The Interpretive Education Center serves as the indoor classroom to orient students with the basic background knowledge which is then related through the outdoor activities at the site of the resource. In close proximity to the Education Center is the complex of archaeological sites, anchialine ponds, and shoreline access between Mahai‘ula Bay and Kāwili Point that provide a venue for this outdoor classroom.

A dryland botanical garden is proposed for this area. It will function as an interpretive facility for self guided tours, an outdoor classroom and a nursery for Kekaha Kai State Park. Beyond plantings of dryland vegetation (both native and introduced) there will be displays of old and new dryland agricultural practices going back to the ancient Hawaiians. Sweet potato was grown in swirling mounds by the Kanaka maoli and these practices can be shown in the garden. Conservation techniques related to dryland gardening will be taught.

A hula platform should be constructed allowing for performances and classes. A section of the site will be reserved for recreational features. *Hōlua* slides, *ulu maika* and *papamū* should be recreated and classes and tournaments held in this area around the educational center. Similar, compatible features should be considered in this area.

Interpretive Signs and Trails

Interpretive signs/kiosks are proposed at the 2 trailheads in the vicinity of the Interpretive Education Center to interpret the historic trails of Mahai‘ula and Kaulana. One kiosk at the joint trailhead to the north of the Interpretive Education Center at Keawehala would serve to interpret both the Kāwili Point complex and the coastal trail. The second kiosk to the southeast of the Interpretive Education Center would denote the trailhead of the *mauka-makai* trail. The interpretive use of these historic trails offers an opportunity for the visitor to “walk in footsteps of those who came before”. The interpretive themes to be highlighted on the trails include their age, function, and construction style. Additional signs may be placed at selected sites along the trails to highlight significant cultural or natural features, such as petroglyphs, *papamū*, and anchialine ponds.

The coastal trail probably dates to the prehistoric period with continued use and modification into the historic period as a horse trail, cart road, and now a jeep road. To accommodate these new modes of transportation, the trail was widened, leveled, and stone paved. This trail is now used to access Makalawena beach from Mahai‘ula and will be incorporated into the larger Ala Kahakai. *Ahu* with *ahupua‘a* name signs are proposed along this trail to heighten visitor awareness about the traditional place names within Kekaha.

The *mauka-makai* trail on the 1801 lava flow dates to sometime after 1801. This trail linked the coastal fishermen with the upland farmers and is still evident in the Mahai‘ula section of the park. It appears as a worn, discolored path that runs diagonally from Mahai‘ula Bay to Ka‘ahumanu Highway in Kaulana over the 1801 flow. A petroglyph cluster exists at both ends of this trail within the park.

Lava Shelters. East of the Education Center is a complex of lava tube shelters and platforms believed to date to the prehistoric occupation of Mahai‘ula. These features may be shared on guided tours but should be monitored and managed for future research.

Resource Preserve – Mahai‘ula Bay Beach Area

The resource preserve for Mahai‘ula will connect to the Kāwili Point preserve. It will include the northern portion of the Bay by Keawehala and the historic period structures built by the Magoons and Ka‘elemakule. Pōhaku O Lama will be a special feature located in the Bay and a special *kapu* should be placed on it.

Camping

KEKAHA KAI STATE PARK

• Park Development Report •

The forest grove area is the ideal area for camping in this section of the park. The future camp area should be separated from the active day use area. As such it should be located on the back edge of the dune area closer to the Ka'elehuluhulu side of the grove. An additional area may need some grading and landscape improvements to accommodate the use and keep the desired separation. Added tree cover would be desirable in this climate. The area should be within a reasonable walking distance to the restroom facilities. Proximity to the activity center will improve security.

Parking

Access and parking should be provided at the complex. The road should be improved to allow school buses and Handi-vans to travel to and park at the site. Parking and turnaround spaces for these vehicles should be provided. Additionally, a parking area for 25 vehicles should be developed adjoining the complex. Pathways from the parking area to the buildings should be designed and improved for ADA accessibility.

Visitor Center

Until the Visitor Center area at the park entrance at Mahai'ula is developed, this area will also serve as a visitor center, and be the administrative and maintenance center of the park.

Restrooms

Restroom facilities should be developed to accommodate groups at the activity center. Additionally, the staff's residence will need wastewater services. An eco-friendly restroom such as a compost toilet should be developed near the camping area.

Landscaping

Milo, heliotrope, *kiawe* grove: The grove of trees behind the Bay is a major asset. Areas under the larger trees should be cleared to provide better-shaded environments for park users. The lower limbs of these trees should be pruned to improve the quality of the shaded space. Rubbish containers should be dispersed at appropriate intervals to help keep the area clean. The shaded area should be slowly expanded over time with the planting of native trees and plants suited to the climate.

One lone Pritchardia palm grows in front of the house at Mahai'ula. Pritchardias should be propagated around the Magoon and Ka'elemakule houses.

It has been stated in oral tradition that the *kou* trees at Mahai'ula were huge and formed a large grove. Stories talk of the fine *kou* wood made of trees larger than the circumference of a man's arms. A *kou* grove should be replanted along the Bay.

Staff's Residence

This residence should be developed in association with the complex. The architecture should complement the existing style in scale, color, material and design. This residence could be assigned to a DOCARE officer.

Park Maintenance Facility

Some of the existing facilities at Mahai'ula and Ka'elehuluhulu are used for maintenance purposes. Until the maintenance base yard at the park entrance is developed, this site should continue to be used as the base yard for the park. Its location next to the residence and education center clearly makes this a good location for coordination purposes.

6.1.6 Marine/Offshore Subsection

Coastal areas are beyond the jurisdiction of the Division of State Parks. However, DLNR and the community recognize the continuity of nature and understand the need to manage and plan coastal areas in conjunction with adjacent land use plans. Efforts to designate Mahai‘ula Bay and possibly the entire offshore area as an Marine Life Conservation District (MLCD) or Marine Fisheries Management area (MFMA) were discussed by Task Force members. These discussions should continue until some designation and mechanism for the proper management of adjacent ocean resources is developed with community consensus.

Mahai‘ula Bay Management

While the ocean areas are not within the jurisdiction of Kekaha Kai State Park, community members felt near-shore areas should be managed as one entity at least up to the mouth of Mahai‘ula Bay. The idea is similar to the old *ahupua‘a* management system which generally extended to the outer edge of the reef. With that concept in mind, a marine fisheries management area was suggested for the waters off Mahai‘ula. The purpose of the designation is to protect the offshore resources which are already overtaxed.

The bay is a breeding ground for fish, especially mullet. The State’s Division of Aquatic Resources conducted a marine life survey of the bay in 1995. The results identified the resources that would be protected by a MFMA designation. Aquatic Resources will also conduct a mullet release program in the bay. Endangered sea turtles and monk seals have been seen in the bay. Reefs are fragile ecosystems and need protection. Besides the MFMA designation, there is a plan to place day use moorings in the area. Day use moorings are generally positive features in a marine landscape, because they minimize the potential damage from dragging anchors. However, because of the location of various fishing *ko‘a* in the area the location of these moorings is important. The moorings need to be placed in a location that does not interfere with the *ko‘a*. Day mooring information is provided in Appendix C.

Outdoor Classroom

The protected bay is a natural outdoor classroom. Educational programs and signage should seek to inform visitors of the rules that need to be followed in near shore areas and in the water to promote the continued use of the area by these marine species. The waves in the bay also attract many surfers. This resource and use should be protected. Fishing techniques both ancient and modern can be taught in these waters.

Resource Preserves

Pōhaku O Lama, the female goddess whose menstrual cycle is referenced in the place name, is located a little offshore. This story should be retold in the myths and legends of Mahai‘ula.

Interpretive Underwater Trails

There are two known shipwrecks in the area. The locations are recorded and the history investigated. Any salvaged items should be placed on display and included in the nautical marine history of the place. One interpretive theme would be:

Dangerous Waters – Story of Shipwrecks. Two shipwrecks from the 20th Century have been documented in shallow waters off the point to the north end of Ka‘elehuluhulu beach. An underwater trail for snorkelers and scuba divers could be developed along with an exhibit in the Education Center.

6.2 AWAKE'E

This is the most remote portion of the Park. The Development Plan for Awake'e is shown as Figure 6-5. Guidelines for development of park facilities in this area are to keep things limited in terms of scale and amount. The natural character of the land should be preserved as much as possible. This segment should have the lowest intensity of use.

6.2.1 Kaho'iawa

Campsite

At present, fishermen have created an ad hoc overnight area around Kaho'iawa. Cleared camping areas and circles of rocks for fireplaces have been created. Fishermen use these areas for multiple day and night fishing. These activities will be supported in this location with new facilities and increased maintenance for convenience and sanitary purposes.

Recreation Facilities

Trash receptacles and some portable toilets or possibly a self-composting toilet will be installed to serve fishermen who stay for longer periods at Kaho'iawa.

Access and Parking

Vehicular access to Kaho'iawa would be redirected to the Manini'owali coastal location. A small parking area will be created near the bend in the road to Kua Bay to allow access to the Kaho'iawa area. Sixteen parking stalls and an overflow parking area will be created at this location. A trail will connect this parking area with the fishing areas. A lookout area with signage will also be developed.

The existing road to Kaho'iawa will be gated and limited to service vehicles, but will still be open for pedestrians.

6.2.2 Pu'u Kuili

Parking

Parking will be available at the trailhead area at the base of Kuili. Parking for 25 stalls should be developed to accommodate hikers into Awake'e and up Pu'u Kuili.

Interpretive Trail

Additional trails will be designated from the parking area to Pu'u Kuili. The summit of Pu'u Kuili provides an unobstructed view of the Kona shoreline and *mauka* areas. While the familiar profile of Pu'u Kuili should remain free of structures, a small in-ground or low profile marker could provide information and orientation from the *pu'u*. Information provided at the summit should also be provided at the trailhead. This is true everywhere there is an inaccessible destination.

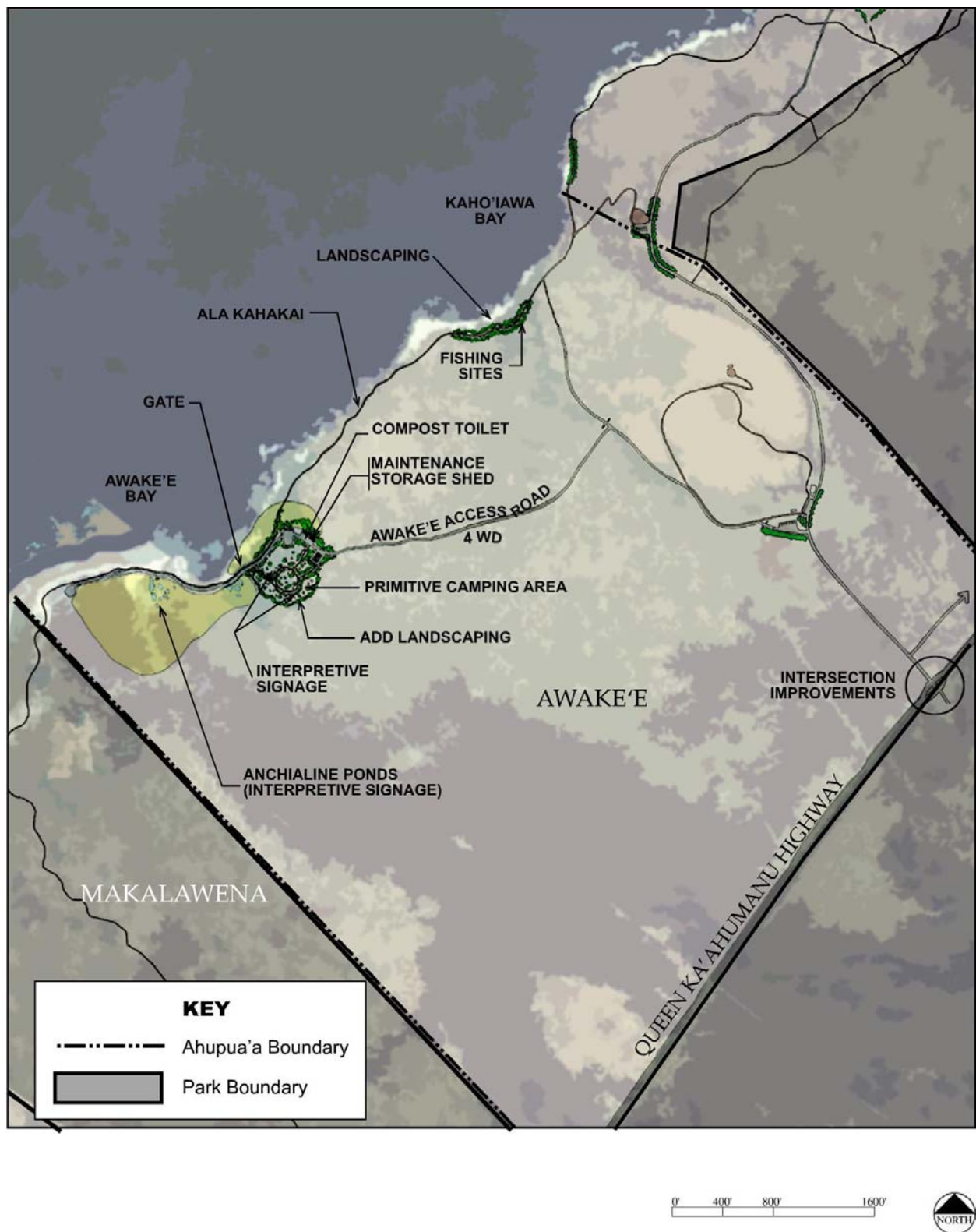
6.2.3 Awake'e Bay

Recreation Facilities

Picnicking, sun bathing, relaxation, nature appreciation and fishing will be the predominant day uses in the area. Picnic areas will be identified and cleared in the Awake'e Beach area. A few benches, tables, and single barbeque pit areas will be located in this area.

KEKAHA KAI STATE PARK

• Park Development Report •



Parking

Twenty parking spaces will be available at the “primitive, wilderness” campsite near Awake’e Bay. The campsite parking area will be used by park personnel for maintenance purposes along with backpackers who prefer wilderness camping and some day users. Access to these parking areas will be available to park users through a permitting process. Parking areas are designed to balance the need to provide access to the coast and to service these areas with the objective of maintaining this section of the park as a primitive wilderness experience.

Campsite

Camp sites will be developed in the forested *kiawe* behind the sandy beach at Awake’e. Camping areas will be designated and trash receptacles placed nearby. The compost toilet will be sited between the camp ground and the designated day use area. Camping will be limited to designated areas to control impact and limit maintenance costs. This campsite will be relatively primitive.

6.2.4 Anchialine Ponds

The Awake’e complex of anchialine ponds is the best example of this unique ecosystem within the park boundaries. These ponds are good examples of the geological evolutionary patterns of these ecosystems. Explanatory signage on the value of wetland habitats in arid coastal regions such as North Kona should be provided. Since Awake’e is the most wilderness-like section of the park, signage should be minimized. Detailed, explanatory displays are more appropriately developed at the visitor center or education center in Mahai’ula. Signage at Awake’e should identify resources and give precautionary notices to people so that they will treat the features with respect. This area should be designated as an ecological interpretive area.

Marine Aquatic Components

Ocean recreation at Awake’e is expected to center around fishing. Swimming and sunbathing will be limited because the shore at Awake’e is generally rocky and because there are accessible pleasant beaches in other areas of the park. Fishing will be supported with a small parking area and primitive camp sites. There are some small sandy patches where canoes or kayaks could land and wading would be enjoyable.

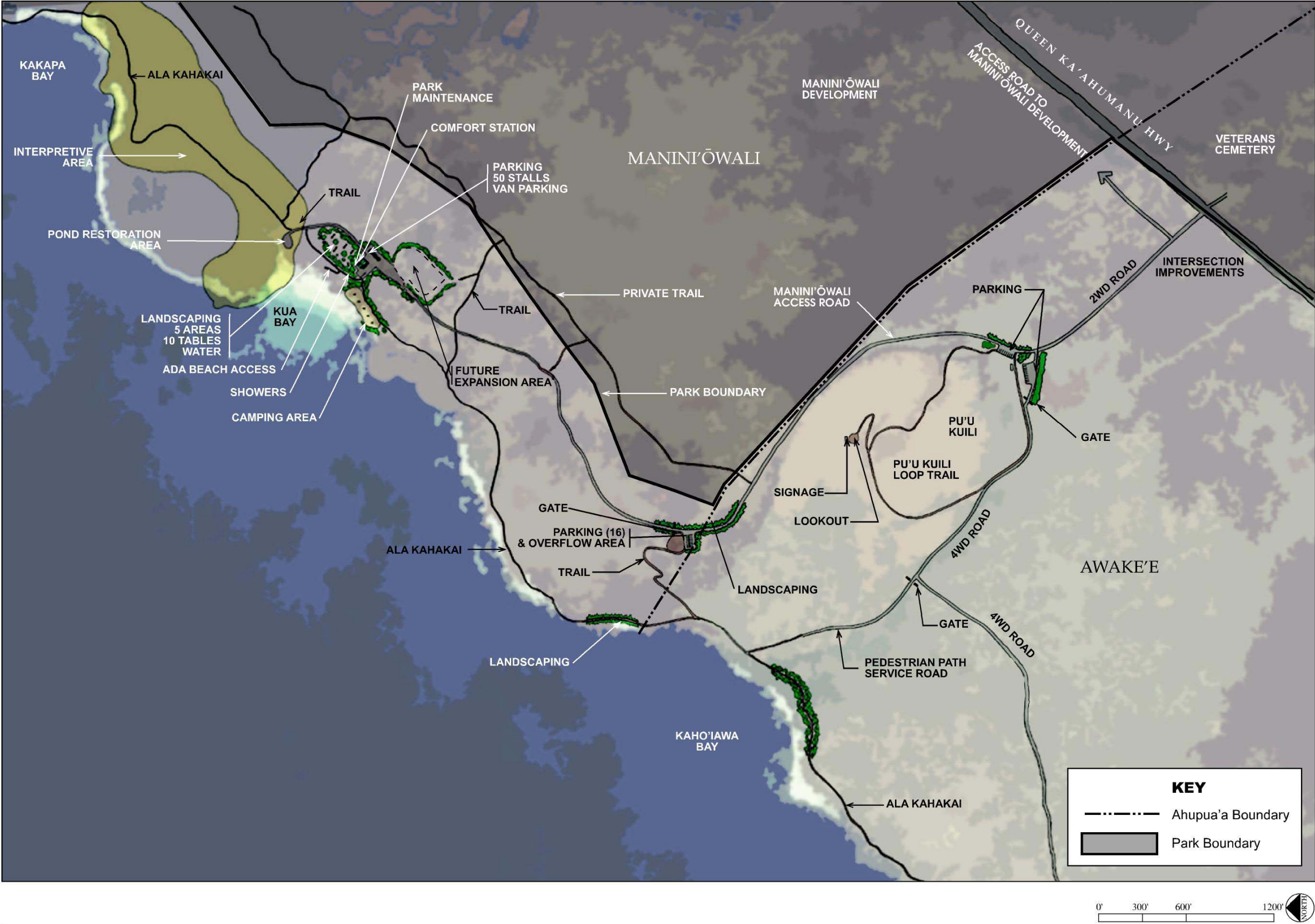
6.3 MANINI’ŌWALI / KŪKI’O

This northern section of the Park is the northern end of Kekaha Kai State Park and adjacent to Kikaua Point. The Development Plan for this area is shown in Figure 6-5.

Due to agreements made during a land exchange in the early 1990s, the developer of the *mauka* lands of Kūki’o and Manini’ōwali has agreed to pay for \$2.5 million dollars of Park improvements including the access road, restroom facilities and water hook-up to the residential subdivision’s system. Recently, the developer agreed to construct the intersection of the access road that it will share with the Park at its own cost. The secondary access from the Manini’ōwali development will exit from this intersection after first connecting to the park access road.

6.3.1 Entrance

A new entrance and access roadway will be created across from the Veterans Cemetery access located *mauka* of Queen Ka’ahumanu Highway. The access roadway will be a two lane two-way paved road beginning in Awake’e and winding down the slope to Kua Bay. The secondary access road to the Manini’ōwali subdivision will connect to this road a short distance from the Highway. A parking area at the *mauka* base of Pu’u Kuili will serve as the trailhead for the hike up to the summit of this Pu’u as well as the entry to the Awake’e section of the Park. The existing access road to Awake’e will be closed and re-directed to this location. This access road will be gated.



KEKAHA KAI STATE PARK

• Park Development Report •

It will remain open during normal park hours and closed at night. The road to Kua Bay will remain open until the new road is built. This road is aligned north of the Pu'u Kuili to avoid disrupting the wilderness interior of Awake'e. In addition, this road alignment will not disrupt the view of the Kuili from the ocean by cutting across the front of Kuili nor will impact the many archeological sites located makai of the *pu'u*.

6.3.2 Kua Bay

Day Use Area

A day use area will be designated around Kua Bay.

A comfort station with a water hook-up will be constructed. Showers and picnic facilities will be developed next to the parking area. These facilities may include barbeque grills and small shelters. This area of the park will receive a lot of use from the adjacent residential development when it is constructed as well as from tourists and other park users from the rest of the region. The water and wastewater systems will be connected to the system in the adjacent, private development. This facility will be ADA accessible. From this day use area, an ADA accessible path to the sandy beach will be created.

A shed will be located next to the comfort station for storage of park maintenance supplies and a small work area. A dumpster will be located in an enclosed area next to this shed.

Campsite

The camp area is proposed for a location on the southern end of Kua Bay near the main day use section. It will take advantage of the sandy pocket in this section of the park. 10-20 camping spots will be developed in this area. There will be an ADA accessible trail from the restrooms to this site, and an ADA accessible camp site.

Landscaping

The area around Kua Bay is very sparse in vegetation. Except for a few short coconut trees and stunted *kiawe* trees, the landscape is sparse grasslands or open lava fields. It is proposed that additional dry land trees, coconut palms, and landscaping be installed to provide some protection against the elements. The picnicking and camping areas should be landscaped with shade trees such as *milo*, *wiliwili*, *kiawe*, and *kou* to provide shade protection. The gray water from the comfort stations should be considered for use in landscape irrigation. The landscape around Kua should create a verdant *kipuka* on the coast.

Archeological and Natural Resources

The area is rich in archeological resources. A danger to the resources exists because the concentration of resources is high and their location is near activity areas and pathways. The park is narrow in this area and there is not much flexibility in moving circulation pathways away from the sensitive archeological sites. In this context, the best approach is to create clear vehicular and pedestrian pathways and install landscaping and signage in a manner that minimizes ignorant destruction of the resources. Features should be identified with signs and requests for respect. Access should be limited to some features.

An interpretive zone is recommended from the pond behind the beach. Including a portion of the beach and the edge of the lava, this zone would include the edge of the lava flow and include the trail to Kakapa including 100-foot buffers on both sides and continue on to Kakapa Bay to include the areas of high site concentration *mauka* of that Bay. Off-road vehicles would be restricted from this area as well as any activity that would damage these resources.

The pond at Kua Bay and the area around it is proposed for restoration. Coconuts, *kou* and *milo* should be planted around the pond and the pond should be restored.

The existing four-wheel drive goes to the sand in front of the anchialine pond. This road will be restricted to vehicles and converted to an ADA accessible pedestrian path to the pond and beach.

Parking Area

There will be a paved parking area for 50 cars and two school buses near the comfort station area. ADA parking stalls will be located next to the comfort station. The parking will be clustered but broken into smaller areas along the road.

A future expansion area will be graded in a low, flat hollow area *mauka* of the day use area. It can be used as overflow parking if necessary.

The parking areas will be landscaped to blend them into the landscape and minimize the heat gain from asphalt surfaces.

6.3.3 Kakapa Bay

No facilities are planned at Kakapa Bay. The only proposed improvement is to the existing pedestrian pathway that links it to Kua Bay. This will be the designated Ala Kahakai through this area. The areas of high concentration of archaeological features will be included in the interpretive zone that will stretch from Kua Bay to Kakapa along the existing trail. Interpretive signs should be placed at the trail near the public shoreline access point in the Kūki'o Development. These signs should inform people about the interpretive area without specifying sites. Further information will be available through docents and Park specialists. Proper behavior and treatment should be identified as well as penalties for damaging or destroying the features. ADA signage is needed at ADA accessible trail heads and/or the ADA accessible parking area at both ends of the trail to and through Kakapa area.

6.4 DEVELOPMENT PHASING

Park development will occur in phases as funding becomes available. Criteria for phasing should be based on importance to public health and safety and protection of resources. Funding such as that provided by the adjacent Manini'ōwali Development should be used efficiently and leveraged for maximum benefit. Support from other corporate and non-profit entities should be solicited to support park development and maintenance.

6.5 PARK DEVELOPMENT COST

Park Development will occur incrementally based on available funding. Some of the items in the Conceptual Master Plan adopted by the Board of Land and Natural Resources have been completed. Most of the highway improvements at the main park entrance to Mahai'ula were completed by the State Department of Transportation. Additional improvements such as the addition of a deceleration lane in the Kailua/Kona bound direction should be completed in future phases. Table 6-1 summarizes the overall development costs for the park. Detailed cost estimates for each area are listed in Tables 6-2 through 6-3. At full development the total development cost is anticipated to be approximately \$6.7 million.

KEKAHA KAI STATE PARK

• Park Development Report •

Table 6-1 Summary Cost Estimates - Kekaha Kai State Park	
MAHAI'ULA	\$3,026,000
AWAKE'E	\$457,350
MANINIOWALI	\$3,224,450
TOTAL	\$6,707,800

KEKAHA KAI STATE PARK

• Park Development Report •

TABLE 6.2 MAHAIULA COST ESTIMATES					
Item	Details	Unit	Quantity	Unit cost	Cost
Mahai'ula Entrance	Visitor Center	S.Q.	1800	250	\$450,000
Mahai'ula Entrance	Baseyard building	S.Q.	1500	175	\$262,500
Mahai'ula Entrance	Fencing around baseyard	LF	10,000	1.5	\$15,000
Mahai'ula Entrance	Gate	Each	2	12,000	\$24,000
Mahai'ula Entrance	Baseyard paving	S.Q.	6,000	6	\$36,000
Mahai'ula Entrance	Public parking (25 stall, 2 buses)	S.Q.	8,000	6	\$48,000
Mahai'ula Entrance	Entrance Gate	Each	1	20,000	\$20,000
	SUBTOTAL				\$855,500
Ka'elehuluhulu	Beach pavilion	S.Q.	1000	150	\$150,000
Ka'elehuluhulu	Picnic tables	Each	10	1,500	\$15,000
Ka'elehuluhulu	Graded parking (for 150 cars)	S.Q.	25,000	2	\$50,000
Ka'elehuluhulu	Comfort Stations	Each	1	185,000	\$185,000
Ka'elehuluhulu	Walkways	LF	3000	20	\$60,000
Ka'elehuluhulu	Information kiosk	Each	1	15,000	\$15,000
Ka'elehuluhulu	Gates	Each	2	12,000	\$24,000
	SUBTOTAL				\$499,000
Mahai'ula	Renovate Magoon	Each	1	200,000	\$200,000
Mahai'ula	Renovate Kaelemakule	Each	1	100,000	\$100,000
Mahai'ula	Staff residence	Each	1	150,000	\$150,000
Mahai'ula	Maintenance building	S.Q.	750	150	\$112,500
Mahai'ula	Education Center	S.Q.	1500	150	\$225,000
Mahai'ula	Canoe Hale	Each	1	75,000	\$75,000
Mahai'ula	Parking (25 cars, 2 bus, 3 service)	Sq Ft.	10000	3	\$30,000
Mahai'ula	Campsites	Each	20	2,000	\$40,000
Mahai'ula	Comfort Station	Each	2	185,000	\$370,000
Mahai'ula	Dryland Garden	S.Q.	10000	2	\$20,000
Mahai'ula	Camp parking	S.Q.	2000	2	\$4,000
Mahai'ula	Trails/walkways	LF	2000	20	\$40,000
	SUBTOTAL				\$1,366,500
Mahai'ula	Main Access Road grading	LF	5000	30	\$150,000
Mahai'ula	General Trail Improvements	LF	3000	5	\$15,000
Mahai'ula	Signs	Each	100	150	\$15,000
Mahai'ula	General landscape Enhancements	NA			\$125,000
	SUBTOTAL				\$305,000
	MAHAIULA TOTAL				\$3,026,000

KEKAHA KAI STATE PARK

• Park Development Report •

TABLE 6.4 MANINIOWALI COST ESTIMATES					
Item	Details	Unit	Quantity	Unit cost	Cost
Intersection	At grade channelized intersection, single left turn land (storage and decel lanes) per DOT	unit	1	1.1 to 1.6 million	\$1,600,000
Roadway	Roadway grading at perimeter of Pu'u Kuili	L.F.	?	?	?
Roadway	Roadway, 20 feet wide, between highway and the Kua Bay parking area, including Kaho'iawa spur (min. length 1 mile = \$550,000)	L.F.	8200 (1.5 miles)	\$120	\$984,000
Security Gate	Park Security Gate at highway entrance in place complete	gate	1	\$12,000	\$12,000
Security Gate	Park Security Gate at Awakee road in place complete	gate	1	\$12,000	\$12,000
Security Gate	Park Security Gate at Kua Bay, in place complete	gate	1	\$12,000	\$12,000
Parking	Parking area at junction of Maniniowali - Awake'e roads (10 stalls at 180 sq+ turning area)	S.Q.	2000	\$120/20 sq.	\$12,000
Parking	Parking area at Pu'u Kuili Trail (10 stalls)	S.Q.	2000	\$120/20 sq.	\$12,000
Parking	Parking area at Kaho'iawa Area (10 stalls)	S.Q.	2000	\$120/20 sq.	\$12,000
Parking	Parking area at Kua Bay (50 stalls)	S.Q.	10000	\$120/20 sq.	\$60,000
Parking	Parking area expansion at Kua Bay (50 stalls)	S.Q.	10000	\$120/20 sq.	\$60,000
Signage	Park Sign at entrance at Highway	sign	1	\$1,000	\$1,000
Signage	Trail signs	sign	12	\$50	\$600
Comfort Station	Comfort Stations at Kua Bay, in place and complete	unit	2	\$185,000	\$370,000
Comfort Station	4" PVC Sewerline between comfort stations and the property line	L.F.	700	\$52	\$36,400
Picnic Tables	Picnic Area Tables, Kua Bay shoreline	table	10	\$1,500	\$15,000
Picnic Tables	Picnic Area Tables, Kua Bay mauka	table	10	\$1,500	\$15,000
Picnic Tables	Picnic Area Tables, Kaho'iawa shoreline	table	10	\$1,500	\$7,500
Call Box	Emergency Call Box, Pu'u Kuili Parking Area	unit	1	?	?
Call Box	Emergency Call Box, Kaho'iawa Area	unit	1	?	?
Call Box	Emergency Call Box, Kua Bay Parking Area	unit	1	?	?
Trash Container	Concrete / coral Trash Container (35 gal. Barrel)	unit	10	\$295	\$2,950
TOTAL			\$3,224,450		
Picnic Table Alternatives					
	Wood				\$1,500
	Hollow Block and Wood				\$2,000
	Heavy Duty Wood & tubular steel			\$212. Plus shipping	
	Recycled Plastic Tables				\$5,000
	Concrete Tables				\$6,000

KEKAHA KAI STATE PARK

• Park Development Report •

TABLE 6.3 AWAKE'E COST ESTIMATES					
Item	Details	Unit	Quantity	Unit cost	Cost
Awake'e	Main Road rough grading	LF	8000	10	\$80,000
Awake'e	Trail Development (Ala Kahakai)	LF	6000	8	\$48,000
Awake'e	Puu Kuili Trail Development	LF	1200	8	\$9,600
Awake'e	Gate	Each	2	12000	\$24,000
Awake'e	Signs	Each	25	150	\$3,750
Awake'e	General Landscape Enhancements	NA			\$50,000
	SUBTOTAL				\$215,350
Camp/Day Use Area	Compost Toilet	Each	1	125,000	\$125,000
Camp/Day Use Area	Storage shed	Each	1	75,000	\$75,000
Camp/Day Use Area	Graded parking	S.Q.	6000	2	\$12,000
Camp/Day Use Area	Primitive camp sites	Each	15	1000	\$15,000
Camp/Day Use Area	Picnic tables	Each	10	1500	\$15,000
	SUBTOTAL				\$242,000
	AWAKE'E TOTAL				\$457,350

Section 7.0

PDR – Park Management

7.0 PARK MANAGEMENT

7.1 PARK OPERATIONS

7.1.1 Staffing

7.1.1.1 State Parks Staffing

The Kona Interpretive Park Technician will be responsible for the development and implementation of interpretive and educational programs in a number of coastal Kona State Parks in addition to Kekaha Kai State Park. The Kona Interpretive Park Technician will initially be headquartered at the Education Center in Mahai'ula but will have park-wide responsibilities. This State-funded position operates the interpretive/educational program, assists agencies and resource professionals in the management of the park resources, interacts with park visitors, and oversees volunteer groups conducting various projects within the park.

The State Parks Interpretive Program Manager supervises the Park Technician, determines the direction of the interpretive program, and establishes policies for the operation of the program at Kekaha Kai. In some instances, the Departmental Volunteer Coordinator may assist in organizing large volunteer projects at the park but will coordinate these efforts with the Interpretive Program Manager and Park Technician.

Initially, it is anticipated that the Park Technician with a docent program will be able to operate the educational program from the Mahai'ula Education Center. However, as the interpretive program develops and the interpretive facilities are constructed, staffing needs will increase. The operation of the Visitor Center/Museum will involve a substantial staffing increase, including a park coordinator to oversee the program operations in the park, interpreters, a museum curator, and a support staff. One option to State-funded staff positions would involve turning over the operation of the facility to a non-profit organization or develop a partnership with the non-profit that would supplement the staff.

The maintenance of the park is conducted by groundskeeper and caretaker positions overseen by the State Parks Hawai'i District Superintendent and for organizational purposes, is separate from the Interpretive Program staffing and activities. Expanded park development and the increased visitor traffic will require additional staff to maintain and monitor facilities. Ideally there should be six staff for Kekaha Kai.

7.1.1.2 DLNR Technical Staff

The technical and professional staff within the Department of Land and Natural Resources, including archaeologists, botanists, and biologists, will be asked to assist in developing and implementing the various resource management programs and policies of the park. Along with the staff of State Parks, the Divisions of Aquatic Resources and Historic Preservation will be most directly involved in the development of the educational and interpretive programs. Aquatic Resources has standard transects that they normally monitor. This information should be routinely shared with State Parks such that it becomes part of the regular reports tracked by Park maintenance staff for their management decisions. The Division of Conservation and Resource Enforcement will provide enforcement and security.

7.1.1.3 Docent Program

A docent program will be developed to assist with the operation of the educational and interpretive programs. Some of the docents may be volunteers trained to assist with the marine and cultural education programs. These docents may give the interpretive talks, supervise the hands-on activities in the Education Center, and lead the outdoor classroom activities. *Kūpuna* will be asked to participate in various program activities to promote an understanding and knowledge of the cultural traditions associated the park and its resources. For example, some *kūpuna* may demonstrate the traditional fishing techniques while others may demonstrate traditional art and crafts in the Hawaiian Cultural Center. As

the program develops, these *kūpuna* may also be willing to host various workshops and training opportunities in the park to perpetuate these cultural traditions. A good docent program is crucial to the long-term health of the community. Docents form a strong link to the surrounding community through a network of respected elders and interested parties. Due to its importance it should be funded to some extent if possible. Again, because of public sector resource limitations a public/private partnership in the form of a foundation would help develop and maintain this program. The program should be coordinated by the DLNR volunteer coordinator but should have a Kona coast presence. The Ka'elemakule House would be an appropriate headquarters for this program.

7.1.1.4 Volunteers

In addition to the docents, volunteers will be sought to assist with a range of projects in the park. Some of these projects may involve resource management, such as participation in fish transect surveys, trail maintenance, and monitoring of the anchialine ponds. A good example of a volunteer group that could assist in long term monitoring are people who have been trained through the UH Sea Grant program. Over a thousand people have been trained to recognize ocean and coastal resources and how to monitor and assess their condition. Through this program volunteers go to places where they normally like to go and monitor conditions. If this information were routinely brought into the Park management program it could be used to assess conditions and determine needs for resource protection and rest periods for portions of the Park and coastal areas. Other projects may entail litter clean up, vegetation control, and minor facility repairs. These volunteer projects will be organized and coordinated by the Park Technician with assistance from the DLNR Volunteer Coordinator.

7.1.1.5 Park 'Ohana

A growing number of community groups with interests in Park development are forming. The size of this 'ohana is expected to grow as its new programs are developed and the park evolves. A park 'ohana called Hui o Laulima o Kekaha Kai has been formed. The organization has applied for 501C3 status and is involved in maintenance and fund raising efforts at this time. The organization has a set of governing rules that are inclusive and open. There is a need to develop a formal relationship between this group and the Division of State Parks. This relationship should identify areas where Hui Laulima can support resource protection and education. This relationship with Hui Laulima is not intended to exclude participation by other groups.

Within the larger park 'ohana, smaller groups of stakeholders should be encouraged to take ownership of specific resources. For example, if a Marine Fisheries Management Area is designated a citizens advisory committee should be formed to help monitor and enforce the rules of the MFMA. Another example would be to establish a permanent cultural committee to oversee the development of a cultural plan, pursue its implementation and assist in the management of cultural resources with the oversight, and coordination with State Parks. Sensitivity increases when there is an official presence, even if the presence is voluntary personnel.

There should be regular meetings between the park 'ohana and staff from the Division of State Parks. These meetings should identify upcoming issues, serve as a clearinghouse for problems and propose solutions to issues and problems.

7.1.2 Park Safety and Security

The safety of park visitors is paramount. The protection of park facilities and resources is also vitally important. In large, open areas security is difficult to ensure. The poor road access to the sites in the park also makes emergency response times longer. In order to address these and other issues several components make up the security system for the park.

7.1.2.1 Live in Park Employee

There will be a staff residence in the Park. It will be located near the Education Center at Mahai'ula. The employee's presence will discourage vandalism in the park. The presence of live-in staff also provides a single point of contact for emergencies. The staff person should have an off-road vehicle to patrol the park. A back-up plan is needed to provide coverage when the resident staff person is unavailable due to vacation, illness or other personal reasons.

The enforcement of park rules is primarily the role of the DLNR Division of Conservation and Resources Enforcement (DOCARE). Unless the resident is a DOCARE officer, his or her role in this area is primarily to inform visitors about the resources in the park and the park rules and assist the maintenance staff in resource management.

7.1.2.2 Gates

Gates are included in the Park Plan to enhance management of the Park. The purpose of this management is to handle visitor traffic, hours of operation and protect resources. New gates should be heavy duty and resistant to weather. The areas immediately adjacent to the gates should be properly reinforced to restrict illegal entry by off road vehicles around the gated area. Walls and large boulder barriers should be considered. Gates should be routinely checked for security, proper operation and maintenance.

The main entry to the Mahai'ula/Kaulana section is gated. A newer, stronger gate should be installed. The two carved kii, by Clarence Medeiros Sr. currently placed at the Kona International Airport, will be relocated to this entrance when the proper pedestals and gate improvements are made. This gate will be managed from the visitor entrance facility when that structure is built. Signage at this gate should include hours of operation and general rules about the entire Park, not just the Mahai'ula portion.

Chains will continue to be used to control access at the crossroads area near the beach. The spur in the road to Mahai'ula will generally remain closed and will be managed for activities at the educational complex.

A gate is proposed at the fork in the road mauka of Pu'u Kuili which directs traffic into Manini'owali and Awake'e. The fork that branches into Awake'e will be controlled and vehicular access will be limited to Park staff and visitors with access rights to Makalawena.

A gate will be installed at the bend of the new road into Manini'owali. This gate will be open during normal park hours and closed at night. Hours of operation will be posted at the gate.

7.1.2.3 Telecommunications

Park personnel will use cellular phones to get in touch with the police or fire department.

7.1.2.4 Volunteers

While volunteers will not be officially deputized, it is suggested that selected members of the park *'ohana* be given uniforms and can be trained to educate the public regarding park regulations. The mere presence of official uniforms would help improve security. Training and instruction should be provided to these volunteers and the volunteer coordinator should coordinate their activities. Volunteer activities will be coordinated through the Park caretaker and interpretive programs specialists.

7.1.2.5 Natural Hazards

In wilderness areas, natural hazards create safety problems. The conditions of trails, intensity of the Kona sun, high waves, strong currents and collapsing lava tubes all pose potential hazards. Signage for dangerous areas and educational programs and brochures available at the entrance to the park would all aid in minimizing potential accidents. An informational kiosk should be developed at the entrance to the park even before the visitor center complex is developed. Safety brochures and general informational

brochures should be stocked at the kiosk. Similar brochures should be located at the crossroads kiosk, Ka'elehuluhulu Beach and the Activity Center. Emergency procedures will include standard 911 calls and training of park personnel. Civil Defense warning system effectiveness in the more remote areas of the Park such as Awake'e should be tested. Campers and fishermen in the more remote areas should be able to hear sirens and similar warnings that may be triggered by earthquakes and tsunamis. Instructions for appropriate responses in such emergencies should be included at the educational kiosks and handed out with permit applications.

7.1.2.6 Fire Plan

Being a dry landscape, fire is a potential problem. This is especially true of the grassland areas and the public picnic areas. The dry grass and branches could potentially ignite like tinder. The Activity Center area and the future visitor center area need fire protection as well. Since there is no water system that can be used for fire protection purposes, an alternate system needs to be developed.

Camp areas are also potential fire hazard areas and rules need to be clearly stated. Portable stoves and burners should be strictly controlled and limited to specific areas.

The ocean will serve as the water source for helicopter drops on brushfires. Near the designated picnic and activity areas brackish water wells and tanks should be developed and brackish water should be available to rinse off after swimming and to wash down equipment. This water can be used for fire protection. Signage should clearly indicate that this is not drinking water.

All structures should have chemical fire extinguishers.

A landscape maintenance program should keep barbecue areas free of debris and dry trimmings. These areas should be specifically located away from vegetated areas. Enough separation should be provided to minimize dangers from windblown sparks and ashes. Designated picnic areas should also be kept free of dry vegetation and flammable debris. Yard trimmings should be chopped and composted and used to enhance the limited soil in the vegetated areas and the botanical garden.

7.1.3 Maintenance

Maintenance is a major part of park management. Because of the size of the park a small maintenance base yard should be developed. The permanent location of this base yard should be adjacent to the visitor center in a well-screened equipment enclosure and an office/storeroom structure. This location would be ideal as the rest of the park develops and the Queen Ka'ahumanu Highway becomes the service spine. In the interim, the Activity Center at Mahai'ula area should function as the maintenance base yard.

7.1.3.1 Solid Waste

Solid waste will be handled by park personnel in regular pick ups. Trash receptacles will be placed in all areas with high traffic volumes. These include toilet facilities, picnic areas, parking lots, trailheads, popular beach or beachside areas and fishing places.

Policies requiring trail users to pack out what they bring in will also be instituted to minimize volumes and foster a new ethic about impacting the environment. Educational programs to minimize waste generation, encourage recycling and mitigating personal waste will hopefully reduce the potential volumes.

Park facilities and operations will also seek to minimize the generation of solid waste in its operations and in the construction of new facilities and renovation of older structures. Cradle to grave assessments will be made for materials and minimization and recycling strategies such as recycling and reuse will be implemented.

The community will also be asked to work with Park employees in keeping trash to a minimum through education and community clean-up days. Several organizations will be asked to adopt the park and help in its maintenance. Even though parts of this park will be developed, a public ethic of “pack it in, pack it out” should be encouraged for all sections of the park; not just the more “wilderness” sections. This will reinforce a public ethic of sustainability by reducing waste generation, encourage appreciation for the natural environment and make work easier for maintenance personnel.

Green waste and other vegetation waste should be chopped up and composted for reuse within the park. Organic material should be recycled or composted. The base yard should be developed to chip and compost green waste.

Marine debris that drifts in with tides and currents will be a target for clean-ups. This is an ideal area for community group participation.

7.1.3.2 Restroom Facilities

Restroom facilities must be designed to accommodate projected use. Eco-friendly facilities such as compost toilets are recommended as long as they can be operated without excessive maintenance requirements. All systems will be operated to avoid contamination to groundwater resources. Locations and type of restroom facilities are identified in the development plans. Instructions for use will be placed prominently at each facility. Park personnel will make daily inspections of all restroom facilities.

The Manini’ōwali facility will be connected to a water source and will be a standard restroom with flush toilets and faucets. Waterless urinals should be considered for this facility. All other facilities will be self-contained or composting toilets.

Roof catchments systems and brackish water sources should be considered for wash water systems for restroom facilities. Wash water drainage will be small and should be accommodated in properly designed dry wells and landscape plots nearby to avoid groundwater contamination.

7.1.3.3 Vandalism

Vandalism increases the cost of maintenance. The control of vandalism will be closely tied to the security and safety management programs for the park. While ideally staff maintenance schedules should cover the needed maintenance this is not always possible in these times of limited budgets. Periodic community workdays may be needed to keep the park facilities in good order. The park ‘ohana should be actively solicited to support the regular maintenance of park facilities.

Community ownership of a resource will reduce the level of vandalism with a kind of self-policing effect. The more the community feels they own the park; the less likely it will be that vandalism will be a major problem.

7.1.3.4 Long Term Facility Maintenance

Salt air accelerates the weathering of structures and equipment. High use increases the need to periodically repair and replace facilities. While a certain casualness is a part of the local lifestyle and a typical coastal atmosphere exists, a regular maintenance program is needed. Recognizing realities, the support of the broader community should be solicited and incorporated into the regular maintenance program. As broad a spectrum as possible should be included from elementary school children to senior citizen groups.

7.2 PARK OPERATING COSTS

Information regarding operating costs for Kekaha Kai State Park is unavailable at this time.

7.3 ACCESS AND VEHICULAR TRAFFIC

All vehicles must remain on roadways or parking areas designated for vehicles. Areas identified as sensitive or interpretive are off limits to vehicles of any kind. The Park will be closed to vehicular traffic during after hours.

7.4 Trail Management Plan

7.4.1 Purpose of Trails and Trail Development in Kekaha Kai

Trails in Kekaha Kai serve three main purposes.

1. To provide pedestrian and hiking linkages that integrate the park. The trails will connect three sections of the Park as well as mauka makai directions. One should be able to walk to all sections of the park.
2. Establish a section of the Ala Kahakai. This section will become part of the 175-mile National Historic Trail. The trail will be both a recreation and interpretive experience. It will link Kekaha Kai with a broader regional network of trails and wilderness/recreational areas.
3. Provide a means of access to various resources in the park and the adjacent ocean areas. Whether it is to meditate at the summit of Pu'u Kuili or to fish at Kaho'iawa, the trails should provide safe access and a pleasant natural experience to the park user.

An additional purpose of the trails in the Park will be to serve as educational tools related to the lifestyles of the native Hawaiians of old. For this purpose, where possible, known historic trails will be used as part of the active trail system.

Where practicable trails will be made ADA accessible. Signage will identify trails that are accessible. Degrees of challenge and difficulty will be described in signs at trailheads. Recognizing that this is a "natural" park, there will be limitations to the degree of accessibility. However, all reasonable efforts will be made to make higher use areas and major resources or attractions in the park accessible.

7.4.2. Purpose of the Trail Management Plan

The Trail Management Plan serves the following purposes:

1. Provides an opportunity for the public to understand and appreciate the various natural and cultural features along this coast while protecting it from overuse and insensitive behavior.
2. To monitor and maintain the trail systems to alleviate health concerns and maintain safety for hikers and walkers.
3. To coordinate the use and maintenance of the trails to accommodate and balance the needs and demands of various user and interest groups.

7.4.2 Management of Resources Along Trails.

While the trail is a resource in itself (especially historic trails), they often pass along or through important natural and cultural resources.

1. Sensitive sites should be protected with signage, barriers or buffers. Natural buffers are preferred to artificial ones. Site-specific plans should be developed from the inventory surveys that have been conducted for the Park.

2. Rules should be posted at trailheads to caution hikers and clarify penalties.
3. A monitoring program should be developed for the more important sites and resources. Community groups and docents should be invited to become de facto observers to help the monitoring program. A periodic inventory status should be part of this program.
4. If restoration activity is needed, this should be done immediately.

7.4.3 Trail Development and Maintenance

Trails perform many functions and have been created over many hundreds of years. As a general practice existing historic trails will be rehabilitated to serve either their original function or comparable modern uses. New trails will be developed accommodate the uses identified in the Conceptual Master Plan.

Pre-contact and Early Historic Period Trails: Historic Trails have been identified in the inventory survey. Many of the traditional trails are disconnected. In some places they are in good condition and in other places they have faded completely and are no longer in existence. Some sections have been eroded by the ocean. Others have been obliterated by newer paths and off road vehicles. The following guidelines shall direct the management of trails:

1. Existing historic trails will be restored and rehabilitated as much as possible. The method of restoration will match the construction methodology and materials found in the historic trail as much as practicable. Existing alignments will respect known alignments as much as possible.
2. Where the trail has disappeared, a connecting link should be created with the advice of the State archaeologist, *kūpuna* and other advisory groups from the area.
3. Keep track of historic sections and new sections.
4. Add signage to educate the public of trails and their importance to culture and lifestyle. Signage should also identify safety issues.
5. Historic trails do not need to be made ADA accessible if the change alters the historic character of the trail.

Later Historic Period and Newer Trails: Newer trails have been created during the last hundred years to access different parts of the Park. Some of these have a historic significance of their own and these should be treated similar to older historic trails. The same rules for restoration should apply.

Some of the newer trails create undesirable access to sensitive sites. These should be closed off and abandoned or deliberately erased and the site restored, if possible. Many trails should be re-routed away from sensitive areas.

New Trails: New Trails will be developed as part of the Park Conceptual Master Plan. These trails will generally focus on the more intensively uses day use and camping areas. As much as possible these trails/walkways will be made ADA accessible. Where areas are too steep or rocky, an alternative ADA accessible route will be identified if possible.

These trails/pathways will connect parking areas with comfort stations, day use and camping areas.

Where practicable, new trails will be routed away from sensitive sites. Buffers and barriers will be established where these are possible and desirable.

Side trails for short distances will be developed to areas of special interest.

While the surfaces of new trails need not be the same as historic trails, the use of native materials (*‘Ili’Ili*, coral, local woods or basalt) is encouraged. However, ADA accessibility will generally be a more compelling criterion in the design and specification of new trails.

KEKAHA KAI STATE PARK

• Park Development Report •

Boardwalks may be considered where it is necessary to traverse sensitive areas such as sand dunes or wetland areas.

Ala Kahakai: The Ala Kahakai will be a combination of historic and new trail segments. The Ala Kahakai will be identified by signage. Because of the anticipated increased use in the future the newer segments will be designed to withstand heavier foot traffic with less maintenance. As much as practicable, the long-term goal of the design and maintenance of the Ala Kahakai will be to make it ADA accessible.

Trail Through Makalawena: The Ahupua'a of Makalawena belongs to Kamehameha Schools and is not part of Kekaha Kai State Park. However, the Coastal Trail is a public trail and it is anticipated that people continue to walk along the coastal areas of Makalawena as they travel between the Mahai'ula and Awake'e sections of the Park. A cooperative agreement with Kamehameha should be developed to facilitate the use of this connection between the segments of Kekaha Kai. Efforts should also be made to protect the sand dune area from impacts (Figure 7-1).

7.5. Cultural Resource Management Plan

A separate Cultural Resource Management Plan will be prepared for the Park. While the details will be specified in the plan that will be prepared by the Division of State parks, some general guideline are identified in this report.

With regard to historic sites, it is the general policy of the Division of State Parks to save everything. Generally, this is possible because parks are low-density developments and there is room to re-site facilities or to avoid development altogether. If, for some reason this is not possible because of another compelling reason, site development will seek to minimize impacts as much as possible.

7.6 Endangered Species Management Plan

Endangered and threatened species will be protected. Signage will inform visitors of endangered species that may be found in the Park and proper protocols for response. Habitat restoration as part of the development plan will encourage the propagation of rare botanical species and protect habitat such as the anchialine ponds that may contain endangered species or serve as feeding and foraging grounds for such species. When periodic visitors such as a monk seal come ashore, park personnel will ensure that they are not disturbed. Aquatic nursery programs and capture and release programs will be accommodated in the Park, and these programs should consider endangered species.

7.7 Commercial Uses

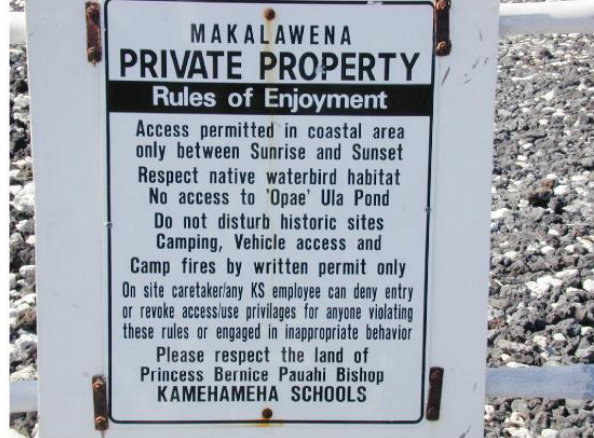
Commercial uses are generally prohibited in Kekaha Kai State Park. Exceptions to this rule will require action by the Board of Land and Natural Resources.

KEKAHA KAI STATE PARK

• Park Development Report •



Boundary from Awake'e



'Opae'ula Pond



Sand Dunes



Existing Trails through Sand Dunes

ENVIRONMENTAL IMPACT STATEMENT

Section 8.0

EIS - Summary

8.0 SUMMARY

8.1 INTRODUCTION / BACKGROUND

This document was prepared by Group 70 International, Inc. to assist the State of Hawaii Department of Land and Natural Resources Division of State Parks to develop the Kekaha Kai State Park. This Draft Environmental Impact Statement (EIS) was prepared pursuant to Chapter 343, Hawaii Revised Statutes, and Chapter 200 Title 11 Department of Health Administrative Rules. The format of this EIS is unique since it refers to portions of the Planned Development Report to fulfill its content requirements.

8.2 PROJECT INFORMATION SUMMARY

Proposing Agency:	State of Hawai'i Department of Land and Natural Resources Division of State Parks 1151 Punchbowl Street, Suite 310 Honolulu, Hawai'i 96813 Contact: Daniel S. Quinn, State Parks Planning Branch Telephone: (808) 587-0290
Accepting Authority:	State of Hawai'i Governor Linda Lingle
Planning/Environmental Consultant:	Group 70 International, Inc. 925 Bethel Street, 5th Floor Honolulu, Hawai'i 96813 Contact: George Atta, AICP (808) 523-5866
Tax Map Keys:	7-2-05:02,03,07 7-3-43: por. 1 7-2-04: 03, 17, 19
Area:	Kekaha Kai State Park is approximately 1,700 acres
Location:	North Kona , Island of Hawai'i Consisting of the following <i>ahupua'a</i> : Kaulana, Mahai'ula, Awake'e, Manini'ōwali, and Kūki'o
Ownership:	State of Hawai'i
State Land Use District:	Conservation

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

Hawai'i County General Plan:	Open and Conservation
Zoning:	Open
Special Management Area:	The entire park area is located within the Special Management Area
Permits Required:	SMA, CDUA, Shoreline Setback Variance, Flood Hazard Variance
EIS Triggers:	Use of State lands, State funds and conservation lands

8.3 PROJECT SITE

Kekaha Kai State Park consists of approximately 1642 acres along about four miles of the Kona coast of the island of Hawai'i. Specifically, the Park includes lands within five *ahupua'a makai* of Queen Ka'ahumanu Highway: Kaulana, Mahai'ula, Awake'e, Manini'owali, and Kūki'o 2. (See Figure 1). For planning purposes, the Kekaha Kai State Park Conceptual Plan also includes Kikaua Point and portions of State Department of Transportation (DOT) lands along Queen Ka'ahumanu Highway. Makalawena, located between Mahai'ula and Awake'e, is owned by The Kamehameha Schools and is not part of the park. Impacts to Makalawena are addressed in this Draft EIS.

Kekaha Kai State Park is owned and managed by the State of Hawai'i, Department of Land and Natural Resources, Division of State Parks. A portion of the southern section in Kaulana belongs to the State Department of Transportation.

8.4 PROPOSED ACTIONS

The Department of Land and Natural Resources, Division of State Parks, in collaboration with the Kona community has developed a Conceptual Plan to improve the Kekaha Kai State Park. The Conceptual Plan envisions a major State Park of approximately 1,642 acres encompassing natural, cultural, wilderness and coastal recreation features located on the Kona Coast of the island of Hawai'i, stretching between the *ahupua'a* of Kaulana and Kūki'o 2.

The Plan seeks to provide improved access and parking, educational and interpretive programs, picnic areas, camping areas, and support facilities such as recreational pavilions, comfort stations, an educational center and visitor orientation facilities to the State Park area. Detailed project descriptions are provided in the Park Development Report (Sections 1.0 - 7.0).

8.5 REASONS FOR PREPARING THIS ENVIRONMENTAL IMPACT STATEMENT

The proposed actions that are described in this Environmental Impact Statement (EIS) involve the use of State land and funding, uses in the Conservation District and within the Shoreline Area. These actions trigger the application of Chapter 343, Hawaii Revised Statutes, and the Environmental Impact Statement Rules, Title 11, Chapter 200 of the Hawaii Administrative Rules.

This EIS has been filed with the State of Hawaii's Office of Environmental Quality Control for publication in the Environmental Notice, and copies have been distributed to concerned and interested parties, as required under the EIS Rules.

8.6 SIGNIFICANT BENEFICIAL AND ADVERSE IMPACTS

The planned developments for Kekaha Kai State Park are intended to improve access and expand outdoor recreational facilities on the Kona Coast of the island of Hawaii.

As such, the significant impacts of these improvements are anticipated to be largely beneficial to the public. These are briefly enumerated below. Also listed below are the few adverse impacts that are expected to occur. Relative to the benefits that will occur; the adverse impacts are not considered significant.

8.6.1 BENEFICIAL IMPACTS

- The new facilities and improvements will expand recreational opportunities offered at Kekaha Kai State Park, while providing increased maintenance and management of park resources.
- Access to the shoreline will be improved in a manner that is desirable by the community.
- New jobs will be created to staff the recreational park.
- Designated camping and parking areas will reduce shoreline impacts caused by unregulated vehicular traffic on the shore.
- Increase awareness of the cultural landscape of the area through interpretive educational programs
- Preservation of archaeological sites throughout the park.
- Revitalization of historic pedestrian coastal trails
- Private partnerships in funding and managing state park improvements and programs

8.6.2 ADVERSE IMPACTS

- Use and enjoyment of the Park may be disrupted by construction activities.
- Increased access will require additional management and monitoring of resource use.
- Increased access may place greater pressure on park resources.

8.7 PROPOSED MITIGATIVE MEASURES

Few potential adverse impacts are anticipated to result from the planned improvements and relative to the benefits that will occur, they are not considered significant. Mitigative measures that will be implemented to minimize these potential impacts, as well as to address and eliminate other potential adverse impacts, are as follows:

Construction Impact Mitigation – Potential impacts due to construction activities will be limited by following best management practices. Project phasing will be implemented to minimize the closure of the entire Park as much as possible during construction.

Management Plans – Management plans will be developed which outline measures and strategies to protect and preserve natural and cultural resources throughout the park. These include trail management plans as well as educational and interpretive program plans.

8.8 ALTERNATIVES

Alternatives to the planned improvements included a do nothing alternative as well as a multi-level analysis of development intensity alternatives.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

No Action – This alternative was reviewed and rejected early in the planning process because it would not protect the resources nor provide increased access to recreational resources.

High, Moderate or Low Intensity Development - Three concept plans were developed, which reflect High, Moderate and Low intensity uses for the development of the park resources within each of the ahupua'a. The alternatives addressed the following park development activities: Parking, Support Facilities, Vehicular Roadways, Camping, Landscape, Interpretive Areas, and Pedestrian Paths.

The alternatives were developed in three levels of intensity with the understanding that any option could be chosen in each planning area, and that specific features or elements could be added or withdrawn from each section. With this framework, the alternatives were presented to the Kona Community in a public meeting on April 25, 1995 at Kealakehe Intermediate School. After several public meetings and discussions with various groups a low intensity, incremental development approach was recommended.

8.9 UNRESOLVED ISSUES

Three unresolved issues have been identified:

1. Extent to which the *mauka-makai* historic trail located in the *ahupua'a* of Makalawena will be part of the Kekaha Kai State Park will remain an unresolved issue and open for further discussion with the landowner, Kamehameha Schools.
2. The trail entering Makalawena from Mahai'ula crosses over sensitive dune areas. Discussion with Kamehameha Schools is needed to protect this resource.
3. The degree to which the road leading down to Mahai'ula will be improved is expected to continue to be a focus of discussion amongst community members.
4. Management of the park will depend heavily on the availability of financial resources. It is not clear at this time whether the State has sufficient funds to implement the planned improvements and necessary management tools.
5. While commercial uses are generally prohibited from the park, periodic activities and non-traditional activities with possible commercial uses still need to be discussed and evaluated.

8.10 COMPATIBILITY WITH LAND USE POLICIES AND PLANS

The planned improvements are compatible with State and County of Hawai'i land use policies, plans and regulations related to the natural environment and recreation. They are consistent with and permitted by applicable land use designations and will contribute in a wide variety of ways to the implementation of State Park goals, objectives and policies.

8.11 REQUIRED APPROVALS AND PERMITS

Four major approvals and permits are required in order for this project to proceed.

1. Acceptance of the Final Environmental Impact Statement by the County of Hawai'i
2. Approval of a Special Management Area Use Permit by the Governor of Hawai'i
3. Issuance of a Conservation District Use Permit by the State Board of Land and Natural Resources
4. Approval of a Historic Preservation Management Plan by the State Department of Land and Natural Resources Historic Preservation Division

Section 9.0

EIS - Environmental Setting

9.0 ENVIRONMENTAL SETTING

9.1 OVERVIEW

The Kekaha Kai State Park is a large (1642-acre) park along the Kona Coast of the Island of Hawai'i. Kekaha Kai State Park is owned and managed by the State of Hawai'i, Department of Land and Natural Resources, Division of State Parks and is surrounded by the Kona International Airport to the south, Kūki'o Development to the north, Queen Ka'ahumanu Highway and Manini'ōwali *mauka*, the Pacific Ocean *makai*, and Makalawena in between.

The Kekaha Kai State Park is an integral part of a series of parks along the Kona Coast. At present, Kekaha Kai State Park is the largest park in the series.

Geographically, the park is composed of three areas containing a variety of cultural and natural resources within five *ahupua'a*. The sections of the park include the following *ahupua'a* areas makai of the Queen Ka'ahumanu Highway: Mahai'ula and the northern portion of Kaulana; Awake'e; and a one thousand foot wide coastal parcel in Manini'ōwali and Kūki'o 2.

- The Mahai'ula-Kaulana area contains two popular beaches (Ka'elehuluhulu and Mahai'ula) accessed via an existing unimproved two-wheel-drive road.
- The Awake'e area is noted for its fishing spots, anchialine ponds and the prominent Pu'u Kuili.
- Makalawena is owned by The Kamehameha Schools and while it is not included in the park, it is discussed because public access will be provided through the area near the shoreline on the historic public right-of-way.
- Manini'ōwali/Kūki'o includes a white sand beach at Kua Bay. Kakapa Bay and a rich cluster of cultural features are located in this *ahupua'a*.
- Kikaua Point has a sandy cove and shaded picnic area. Kikaua Point Park is state-owned, but leased by WB Kūki'o for recreational use. It is included in the park plan, but is not part of the Executive Order for Kekaha Kai State Park. Kikaua Point Park will be operated and maintained by WB Kūki'o.
- There are significant archaeological and natural features throughout the park, including the lava flows and green coastal kīpuka.

The Conceptual Plan seeks to protect these natural and cultural resource areas, including the open space and views, while providing improved recreational opportunities for residents and visitors. Details of these area and descriptions of their existing uses and planned developments are described in previous chapters of this report.

9.2 TERRESTRIAL CONDITIONS

The following areas will be covered: climate, geology and soils, topography, flora, and fauna.

9.2.1 Climate

The climate in West Hawai'i is semi-tropical and arid, with an average annual precipitation of 17 inches. Rainfall increases with elevation and reaches a peak between the 1,200 and 3,000-foot elevations of Hualālai and Mauna Loa volcanoes. Average annual temperature is 78 degrees F and relative humidity ranges from between 71 to 77 percent year round. Winds follow a typical diurnal pattern with on-shore winds (westerly and southwesterly) in the morning and early afternoon hours. Cloudbanks often form along the higher elevation slopes during the day, and offshore breezes occur in the late afternoon and evening. Typical wind velocities range from 3 to 14 knots.

9.2.2 Topography

Kekaha Kai State Park is situated on the gentle western slopes of Hualālai. The topography is gently to moderately sloping. Average slopes in the park range between three and seven percent. The single noticeable exception is Pu‘u Kuili, a 342-foot cinder cone in the Awake‘e section of the park. Most of the shoreline areas are generally flat with slopes less than five percent.

9.2.3 Geology

Kekaha Kai State Park is located on the western slope of Hualālai, a dormant shield-type volcano. The Keāhole Point area was formed by progressive layering of prehistoric lava flows from Hualālai. The lava is primarily pāhoehoe with thicknesses varying from six inches to 100 feet. Lava layers are very porous and contain numerous lava tubes, cracks and fissures. The geologic formation in the park area is generally comprised of highly permeable rocks of the Hualālai volcanic series.

As described earlier in Section 2.1, the predominant natural force shaping this landscape is Hualālai Volcano, mother of Pu‘u Kuili, the dominant cinder cone in the park. Pu‘u Kuili is an excellent example of later stage cinder cones which are created through flank eruptions. As with most flank eruptions, Pu‘u Kuili is the most seaward cone along the northwest rift zone of Hualālai. As one looks mauka along the rift outside of the park boundaries one sees many higher elevation cones going all the way to the summit. Other cinder cones along this line include Puhī‘apele, Akahipu‘u and Moanu‘ahea. Other natural features of the region is the series of kīpuka and the coastline, which are described in Section 2.1

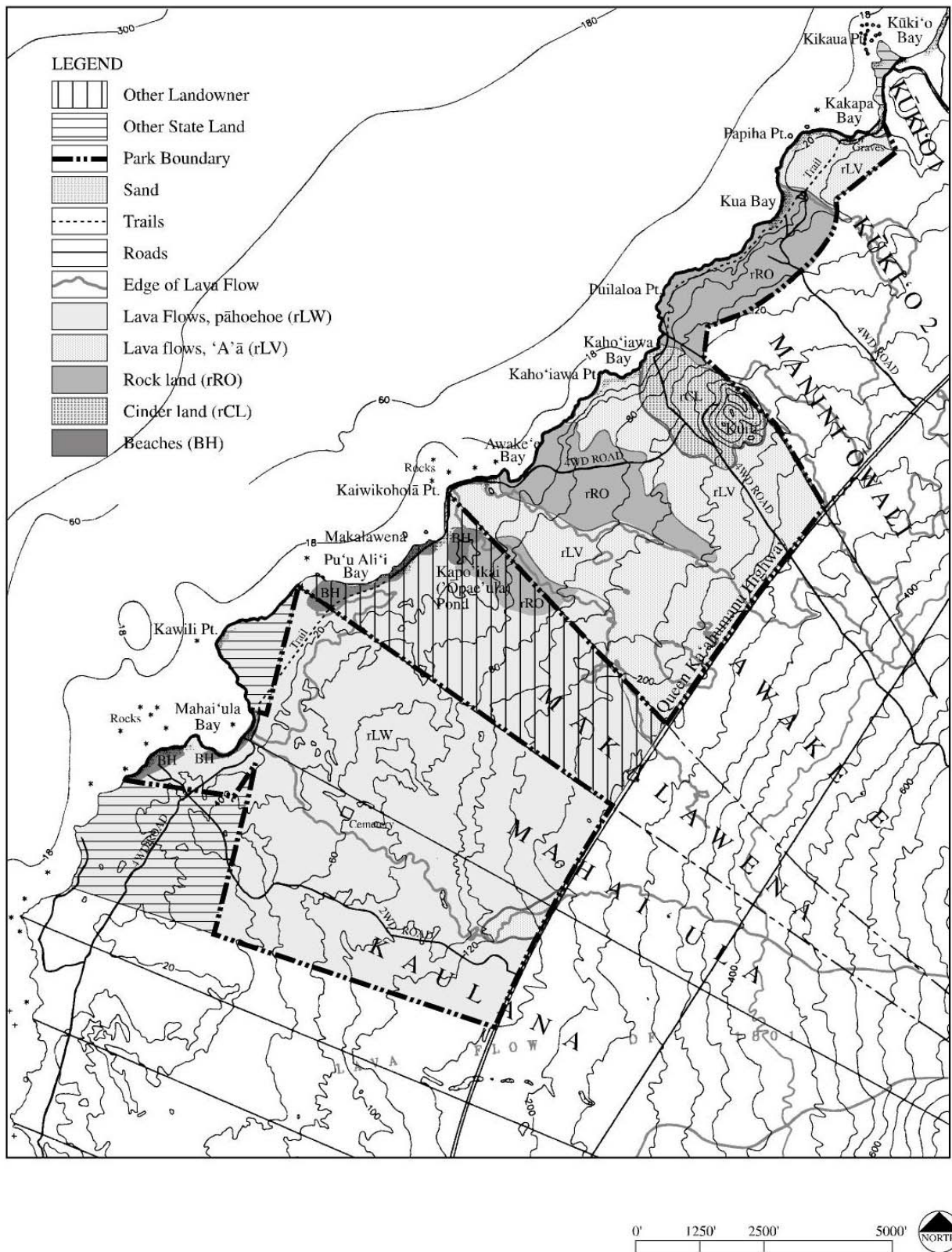
Anchialine ponds are unusual geological features unique to the State of Hawai‘i. They are brackish water ponds with no visible connection to the ocean. An identifying feature of these ponds is the existence of red shrimp (*Halocardia* sp. and others) that have migrated from the ocean through cracks in the basaltic lava flows. These ponds go through a unique evolutionary pattern. Created by lava flows that have reached the coastal areas they begin as depressional areas mixing fresh water and salt water. Eventually they silt in and become dry areas with deeper soils in the middle of rocky lava flows. The largest anchialine pond in the region is Kapo‘ikai Pond, commonly known as ‘Ōpae‘ula. Kapo‘ikai is on private land owned by the Bishop Estate which bisects Kekaha Kai State Park. It received its common name (‘Ōpae‘ula) from the red shrimp in the pond which were harvested by fisherman for bait.

9.2.4 Soils

Soil types in the area are related to volcanic activities and coastal processes. Soils have been mapped as part of the U.S. Department of Agriculture, Soil Conservation Service (1972) Soil Survey for the State (Figure 9-1). Along the shoreline in the sandy beach areas the classification is BH (Beaches). Although not mapped, transient seasonal beaches are found at Awake‘e and Kua Bays. The beach at Mahai‘ula is permanent. The remaining classifications are rLW (pāhoehoe lava flows), rCL (cinder lands), rRO (rock lands) and rLV (‘a‘ā flows). The land is an overlapping mosaic of several lava flows, the most recent of which is from the Hualālai flank eruption of 1801. This layering of lava flows has created a geology of multi-colored rocky areas of different colors and ages. Generally, vegetation has grown more densely on the older flows.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •



Kekaha Kai State Park

Soils

Figure 9-1

The predominant soil types of Kekaha Kai State Park are ‘a’ā lava flows and rock land. There are generally few sections of the site which have soil depths exceeding a few inches. These soil areas are able to support a few species of dry land grasses and trees.

According to the U.S. Department of Agriculture (1972), soil at Kekaha Kai State Park has been determined as not suitable for agricultural use. Pāhoehoe lava flows, cinder land and ‘a’ā lava flows have an agricultural capability class rating of VIII, which is defined as soils and land forms whose limitations preclude the cultivation of commercial plants. Rock land is given a capability class rating of VII, which includes soils which have very severe limitations that make them unsuitable to cultivation, and restrict their use largely to pasture or range, woodland, or wildlife habitat. Kekaha Kai State Park consists primarily of lava rock and is generally unsuitable for agricultural uses.

Two other land classification systems are used to rate the agricultural potential of soils in Hawaii on a scale ranging from A (best) to E (poorest). The University of Hawaii Land Survey Bureau (1972) classifies the soils of the property as category E soils, which indicates they are not suited for agricultural uses. The State of Hawaii Department of Agriculture has also mapped Agricultural Lands of Importance to the State of Hawaii (ALISH). The Park does not contain soils rated as “prime”, “unique” nor “other important” agricultural lands, as defined by ALISH.

9.2.5 Surface and Groundwater Resources

Rainfall in the area is light – approximately 17 inches annually – and groundwater recharge is restricted to seasonal storms or through higher elevation precipitation on the upper slopes of Hualālai. Due to the highly permeable volcanic soil and geologic subsurface, there is very rapid storm water drainage into the lava layers, and runoff is essentially non-existent. The existing soil type would be classified as Class A by the U.S. Soil Conservation Service, meaning that it has the highest water intake rate. The incident precipitation travels briefly over land as sheet flow before it percolates into the soil to become groundwater. There are no drainage improvements onsite. Except for localized site-specific cases, there are no plans for drainage improvement.

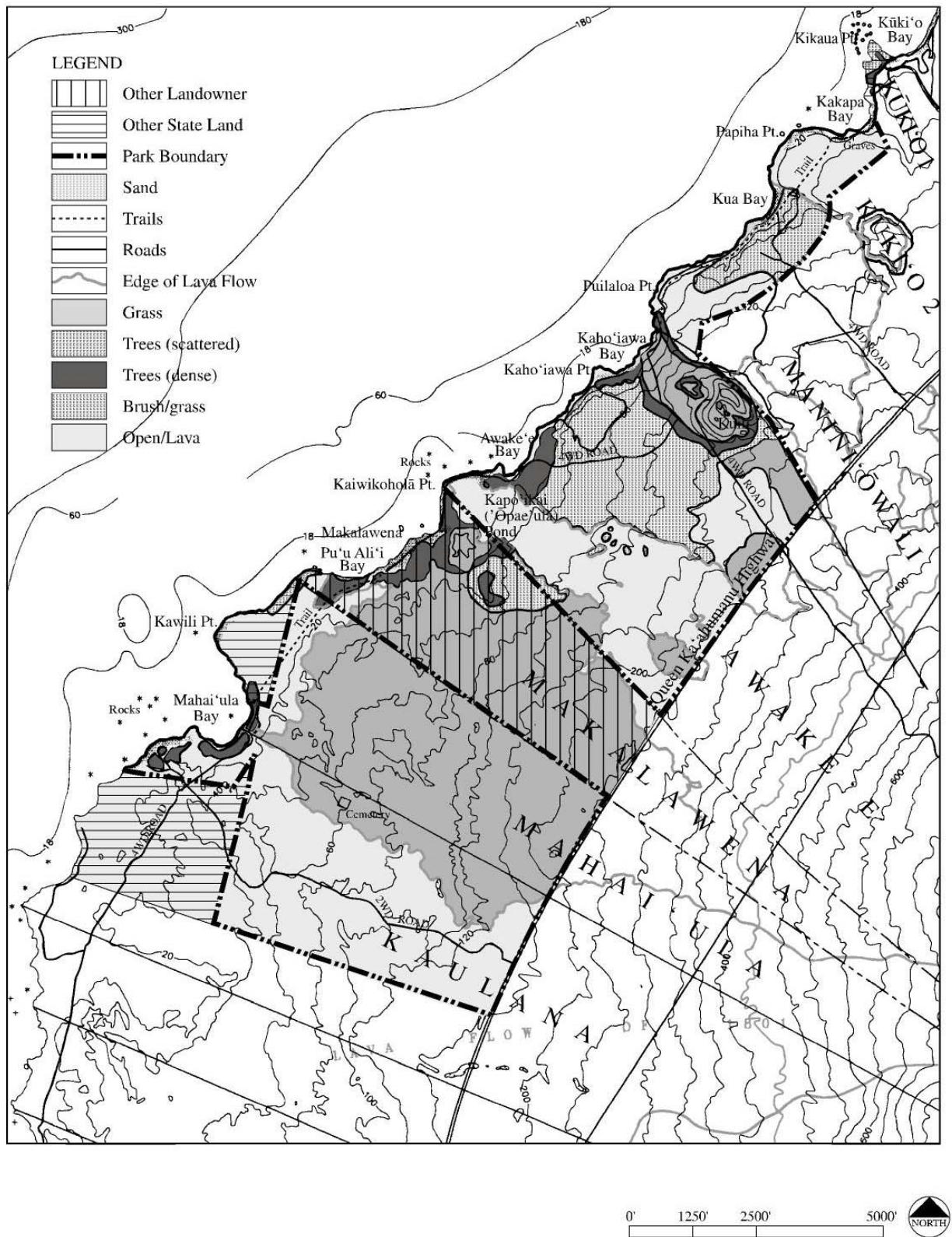
There are no potable groundwater sources in the park planning area. Studies done for Manini‘ōwali and Makalawena show that salinity ranges are likely to be between 1,500 and 3,000 mg/liter total chlorides. Although there are no universal standards for drinking water quality, the EPA standard for potable water is 250 mg/liter total chlorides. Groundwater inflow from upslope areas has not been calculated but accounts of management practices by native Hawaiians indicate they reserved some specific upslope ponds for drinking water and used the lower ponds for a variety of other purposes. These ponds are all fed primarily by groundwater as rainfall is low and evapotranspiration is high. There are no sources of external surface water from streams.

9.2.6 Vegetation

Vegetation is sparse on the Kona Coast. Denser and taller stands of trees and coconut palms are generally found along the coastline and near pond areas where trees can obtain water from groundwater sources. Other areas are barren or sparsely vegetated with grasses, bushes or short trees. Botanical surveys (Char 1995) have identified six vegetation community types: 1) Coastal, 2) Pond, 3) Fountain grass grassland, 4) Kiawe forest, 5) Sparse ‘a’ā, and 6) Roadside. Detail descriptions of these vegetation types are described in Section 2.3 (Figure 9-2).

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •



Kekaha Kai State Park

Vegetation

Figure 9-2

9.2.7 Wildlife: Birds, Fauna and Insects

Fauna in the park area is typical of fauna found throughout this region (Ohashi 1995). Details of the avifauna and marine fauna are described in Section 2.4.

9.3 MAN MADE ENVIRONMENT

9.3.1 Visual Resources

The total area of the Park is not visible from Queen Ka'ahumanu Highway because the section of the highway corridor and the adjoining land are relatively level. Various portions of the Park are visible from the highway. In these sections, there are excellent ocean views from the Highway and of Pu'u Kuili.

The shoreline is characterized by lava, rock outcrops and white cobble beaches. Besides the shoreline areas, the primary visual feature is the Pu'u Kuili cinder cone. It is prominently visible from the north and south approaches along the Queen Ka'ahumanu Highway.

From Pu'u Kuili, there is an expansive view of the shoreline to the north and south and of Hualālai to the east (Figure 1-8).

9.3.2 Air Quality

There are no air quality monitoring stations in the West Hawaii region. The Department of Health maintains monitoring stations in Hilo and Honoka'a, about 60 miles east-southeast of the site, but the data collected are specific to those localities and cannot be correlated to the subject properties. There are no large stationary sources or heavy vehicular traffic in the area. The County does not monitor key automobile pollutants, such as carbon monoxide and nitrogen oxide. At present, the largest intermittent contributor to air pollution is eruptive activity at Kilauea volcano.

Air circulation patterns on the western side of the island are self-contained because the area is sheltered from the full impact of the northeast trade winds. Land-sea breezes dominate air movement patterns: east-southeast winds prevail during the early morning and evening hours while west-northwest sea breezes occur during the remaining daylight hours. Air quality conditions may be more vulnerable here than elsewhere on the island.

9.3.3 Noise / AICUZ

Sources of noise will be from coastal "surf" noise and vehicular traffic noise along Queen Ka'ahumanu Highway. As with all developments which are located in close proximity to the shoreline, a primary source of noise is that naturally caused by wave action crashing against the beaches and lava boulders. A minor source of noise will be vehicular traffic moving along the Queen Ka'ahumanu Highway mauka of the Park.

Air traffic from Keāhole Airport is another source of noise imposed on park users. According to the Air Installation Compatibility Use Zone (AICUZ) maps for Keāhole Airport the southwestern section of the Mahai'ula/Kaulana is in the noise contour portions of the AICUZ (Figure 5-4). Since this portion of the park is in the approach path to Keāhole Airport ground noise levels at parts of Ka'elehuluhulu are in the 65 LDn zone. Everything to the west/southwest of the Magoon/Ka'elemakule complex falls in the 55 LDn zone. While the park is not in the accident potential zone (APZ) of the airport and these levels are not hazardous to human health, 55 LDn or quieter is usually the preferred level for a residential subdivision. The noise does take away some of the wilderness character of the place and is loud enough to force people to stop speaking.

The State Department of Transportation, Airports Division and State Land Use Commission have set standards for developments situated near airports. The standards require a noise easement for areas where LDn levels exceed 55.

9.4 NATURAL HAZARDS

Kekaha Kai State Park is subject to natural hazards, as are similar lands along this stretch of Kona coastline. These include the possibility of seismic activity, lava flow and tsunami inundation.

9.4.1 Flood, Tsunami and Storm Wave Hazard

The 100-year flood hazard boundary closely follows the coastline except near Kakapa Bay (at Kūki'o) and Kaiwikoholā Point (at Makalawena / Awake'e boundary), where the boundary extends mauka for approximately 750 feet. The Flood Insurance Rate Maps (FIRM) shows VE zones ranging up to 9 feet above mean sea level along the shoreline from Mahai'ula to Kikaua Point. See Figure 5-3. A VE zone is a coastal flood area with a velocity hazard (wave action) where flood elevations have been measured. The width of the VE zone varies along the coast depending on coastal and offshore topography. The width ranges from very narrow areas of a few feet to zones as wide as 900 feet by Kāwili Point. The highest calculated elevation is just over 9 feet above mean sea level at Kakapa Bay.

Tsunami inundation is a possibility at the park. Within historic times, the Hawaiian Islands have been subjected to at least 50 tsunami occurrences. The highest tsunami run-up wave heights ever recorded in the Kona region resulted from the 1960 tsunami, which caused extensive damage throughout the State. The 1946 tidal wave destroyed the village or settlement of Makalawena.

9.4.2 Volcanic, Earthquake and Seismic Hazards

The U.S. Geological Survey (USGS) has identified "zones of overall risk" associated with volcanic activity on the island of Hawaii. These zones take into account both direct volcanic activity hazards (lava flow inundation, rock fragments and gases) and indirect volcanic hazards (subsidence, surface rupture, earthquake and tsunami). Six zones (A-F) are classified in this system, ranging from low risk (A) to high risk (F). Both Awake'e and Manini'ōwali which lie downslope of Mt. Hualālai, are located in zone "DE", indicating a relative degree of risk from volcanic action.

Hualālai, the dominant volcano in the North Kona region has been dormant for over 200 years. Its last eruption was the Puhi'apele eruption of 1801. One of the flows from this eruption covered the area around the Kona Village and the other major flow covered the northern section of Keāhole Airport up to Mahai'ula. The park area represents flows over many centuries, in different states of erosion and revegetation. Although Hualālai has not erupted in nearly 200 years underground movement of the magma has caused numerous earthquakes from time to time. The largest recent quake associated with Hualālai was the 1929 quake which registered 6.5 on the Richter scale. While earthquake hazards do not appear imminent, historic records indicate a 62-year frequency for earthquakes of magnitude 6.4 on the Richter scale.

In fact, the entire island of Hawaii is susceptible to earthquakes originating in fault zones under and adjacent to the island. Within the Kona region, two fault zones have been identified. The Kealakekua and Kaloko faults are both located in South Kona, which is distant from the park. For the purposes of structural building design, the island of Hawaii has been classified as having the highest potential for seismic occurrence and danger. The Hawaii County Building Code requires that all new structures be designed to resist these forces.

9.5 NEARSHORE WATER CONDITIONS

9.5.1 Shoreline Area Conditions

The physical structure of the shoreline consists predominantly of low basaltic boulder slopes interspersed with crescent-shaped pocket beaches. The beaches are composed of rounded cobbles and coarse sands which extend into the intertidal area. The southern extreme of Awake'e, near Makalawena, is somewhat anomalous in that a berm of coral rock separates the ocean from a low-lying back-beach area containing a complex of anchialine ponds. The coral rocks have apparently been thrown up on the shoreline after being broken loose by storm action. The most prominent beach of this type occurs along the margin of Awake'e Bay. The shoreline of the northern portion of Awake'e towards Kaho'iawa is somewhat elevated, preventing the formation of tidepools and anchialine ponds.

9.5.2 Coastal Water Quality

Water quality is excellent offshore of Kekaha Kai State Park.

A long-term database for surface water chemical parameters has been collected at the Natural Energy Laboratory of Hawaii (NELH) at Keāhole Point located approximately four miles south of Awake'e and Manini'ōwali. Because of the homogeneity of the coastline and the lack of shoreline development between Keāhole Point and Kekaha Kai State Park, it is likely that water chemistry off the subject parcels is similar.

Water quality standards have been established by the State Department of Health and are defined in Title 11, Chapter 54 of the Hawaii Administrative Rules. According to these standards, the coastline along Kekaha Kai State Park is designated as AA, and considered pristine.

The definition of Class AA waters in Hawaii Administrative Rules §11-54-03 is as follows:

“It is the objective of class AA waters that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. To the extent practicable, the wilderness character of these areas shall be protected. No zones of mixing shall be permitted in this class: (A) Within a defined reef area, in waters of a depth less than 18 meters (ten fathoms); or (B) In waters up to a distance of 300 meters (one thousand feet) off shore if there is no defined reef area and if the depth is greater than 18 meters (ten fathoms). The uses to be protected in this class of waters are oceanographic research, the support and propagation of shellfish and other marine life, conservation of coral reefs and wilderness areas, compatible recreation, and aesthetic enjoyment. The classification of any water area as Class AA shall not preclude other uses of the waters compatible with these objectives and in conformance with the criteria applicable to them”

Lack of suspended material results in extreme water clarity. There are no streams entering the sea along Kekaha Kai State Park, but there is evidence of high volumes of ground water extrusion. At Awake'e Bay, evidence of groundwater discharge is in the form of a visible surface lense of low salinity water and increased nutrient concentrations.

There are several programs to monitor groundwater and ocean water quality. NELH, Nansay Hawaii Inc. (developers of Kohanaiki) and Kūki'o (developers of Manini'ōwali/Kūki'o) are all involved in water quality monitoring programs. Baseline data on the status of water quality and anchialine resources at Manini'ōwali are being provided on a quarterly basis to insure that the development at Manini'ōwali will not impact the quality of the ground, anchialine pools and near shore marine waters fronting the project site. A copy of the second quarter findings from April 2002 is attached in Appendix I.

9.5.3 Marine Environment

Within the shoreline area (from high splash zone to subtidal breaker zone) there is a variety and abundance of marine life determined largely by wave energy, and by the topography and bathymetry of the shoreline that affords shelter to aquatic life. The type of lava flow (a'ā or pāhoehoe) affects the character of habitat in the surf and intertidal zones. Boulders from an a'ā flow provide increased vertical relief and more shelter from the surf. Bays formed from headlands also vary in the type of biota they support depending upon their age, depth, and type of bottom.

The shoreline at Manini'ōwali is characterized by three main types: a'ā flow, pāhoehoe flow, and sandy beach. The distribution of large boulders and lava outcroppings forms a series of tidal pools which support intertidal seaweeds such as Turbinaria ornate, Anfeltia concinna, Sargassum echinocarpum, and Porphyra sp. Sea urchins, including Echinometra matheai, and Echinostrephus aciculatus, are plentiful in protected cracks between boulders. Several small coral heads, Pocillopora meandrina, were present in deeper tidal pools.

The white sand of Maniniowali Beach (at Kua Bay) stretches for approximately 450 feet along the coastline, but appears to be seasonally variable in size. A few Ghost Crab (Ocypode ceratophthalma) burrows were visible along the beach. Because of lack of cover, marine life over the sand patch offshore of the beach is largely limited to transient fish species and other fish or invertebrate species that are adapted to hide in, or just above, the sand. One school of ōpelu (Decapturus sp.) was seen, but no cryptic or sand dwelling species were noted during the survey.

The older pāhoehoe flow characteristic of the shoreline south of Maniniowali Beach forms a ledge at the waterline, dropping immediately into five to ten feet of water along most of the coast. Tidepools here are not so numerous or richly populated as those at the tip of the a'ā lava flow. Dominate algae include Turbinaria ornate and Sargassum echinocarpum.

Baseline studies of the marine environment off Awake'e and coastal anchialine ponds were conducted by Steven Dollar, Ph.D., in 1986 and again in 1990. The studies showed pond conditions and inventory of composition to be identical.

Benthic Community Structure – Corals and Invertebrates:

Near-shore subtidal marine communities are generally defined by the physical nature of the bottom substrate. Unconsolidated sand or rubble will support a relatively low population of surface dwelling invertebrates and fish. Hard substrate may either be basalt (lava) or calcareous in nature and in general provides more niches for fish and invertebrate habitation. Often on the Kona coast the solid basaltic flow is covered by a thin veneer of consolidated limestone sand.

Because of the relatively young geologic age of Hawai'i Island lava flows and the relatively slow growth of corals in these subtropical waters, most corals are growing on a substrate of basalt and do not form true coral reefs, but rather coral communities. Each zone is characterized by a depth range, substrate type, and primary coral species. Down to a depth of approximately 25 feet, the high-surge, Boulder-Zone, Pocillopora meandrina thrives. From 20 to 45 feet depth, the Reef Building Zone, is Pocillopora lobata. This is a zone of moderate surge. The same coral community, however, is also found at 100 feet and below; a depth experiencing low surge. Pocillopora compressa lives in the Slope Zone, from 40 to 100 feet, characterized by moderate surge.

The benthic communities located offshore of Maniniowali are much like other nearby near-shore benthic communities in that coral cover is generally lowest in the near-shore reef zone (15 feet). However, the species diversity is greater in shallow regions compared to the deeper areas. This kind of distribution

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

pattern reflects the relative harshness of physical conditions in the near-shore area, primarily in response to wave stress. Under prevailing conditions, no single coral species is able to monopolize substrata.

The major groups of benthic organisms occurring on the reefs offshore both of the parcels, other than corals, are sea urchins and sea cucumbers.

Reef Fish Community:

In general, reef fish are abundant along the coastline of the Kekaha Kai State Park. The reef fish community is typical of that found along most of the Kona Coast and can be grouped into six general categories: juveniles, planktivorous damselfishes, herbivores, rubble-dwelling fishes, swarming tetrodons and surge-zone fishes.

The offshore fish community structure is also fairly typical of the assemblages found in undisturbed Hawaiian reef environments. The presence of large game fish including parrotfish (*Scarus* sp.), *ulua* (*Caranx* sp.), goatfish (*Parupeneus* sp. and *Mulloidichthys* sp.), and squirrel fishes (*Holocentrus* and *Myripristis* sp.) indicate that this area has not yet been subjected to heavy fishing pressure. The apparent low levels of fishing are undoubtedly a function of the remote location of the site with respect to shoreline access and the distance from the nearest harbor or boat launching facility.

Threatened or Endangered Species:

Three species of marine animals that occur in Hawaiian waters have been declared threatened or endangered by Federal jurisdiction. The threatened green sea turtle is commonly seen along the Kona Coast, and is known to feed on selected species of macroalgae. The endangered hawksbill turtle is known infrequently from waters off the Kona coast.

Populations of endangered humpback whale are known to winter in the Hawaiian Islands from December to April. Whales have been observed from Kekaha Kai State Park as recently as April 2002.

There has also been one recorded observation of the Hawaiian monk seal.

9.5.4 Anchialine Ponds

Brackish water pools separated from direct contact with the ocean, termed “anchialine ponds”, constitute unique coastal features in Hawaii that are inhabited by rare organisms. There are a number of anchialine ponds throughout the Park.

At Awake’e, a series of ponds is located between Awake’e Bay and Kaiwikoholā Point. The pond system continues farther south into Makalawena. Eighteen ponds were numbered and surveyed within the Awake’e property. The ponds are concentrated in a small geographical area, and are surprisingly diverse in size and type. Four of the Awake’e ponds are large (>1000 sq. ft.), 11 ponds are medium (100- 1000 sq. ft.) and four are small (<100 sq. ft.). Four of the Awake’e ponds have “apparent” bottoms (depth to rock bottom) classified as shallow (<20 in.), 14 are moderate in depth (20-60 in.) and none can be classified as deep (>60 in.).

Awake’e ponds are classified by type according primarily to composition of the bottom. ‘A’ā ponds are depressions in lava rock with no growth of benthic macroalgae, and no sediment accumulation. ‘A’ā ponds are the most abundant type at Awake’e (12 of 18). Three ponds are “orange crust” ponds which are similar to a’ā ponds except that the bottom rock is covered at least in part, by orange-brown mineralize crusts of the blue-green algae *Schizothrix* sp. Three ponds are “sediment” ponds which contain bottom layers of unconsolidated mushy sediment up to 2 feet deep.

A common characteristic of all pond types is evidence of cultural modification. Many of the a'ā ponds contained walls that divided the ponds into sub-sectors, or modified pond boundaries. Dating cultural modification of ponds may not be possible, but it is probable that much of the activity was conducted by populations of Hawaiians who inhabited the area in the early 1900s.

The most ubiquitous plant group occurring in the Awake'e ponds is the orange algal crusts that occur in shallow, low salinity ponds. The undersides of rocks from a'ā ponds contain small algal cells that constitute the only plant material in some ponds.

The most obvious characteristic of the Awake'e pond biota is that relative lack of shrimp and native fish species, and the overwhelming domination by introduced fish. Typically, the most abundant fauna of anchialine ponds are snails and shrimp. Shrimp were extremely scarce at Awake'e ponds and only one species, *Halocardinia ruba* (ōpae'ula) was observed. Snails typically found in tide pools and anchialine ponds, especially on the undersides of rocks, were also ubiquitous in the Awake'e pond system. Nor were there any representative pond fish observed in any of the Awake'e ponds. Exotic fish, such as topminnows and guppies were observed in all ponds.

The absence of many of the representative species indicates that the faunal makeup of the Awake'e ponds was found to be somewhat atypical of pond ecosystems.

At Maniniowali, the single anchialine pond is approximately 250 feet behind the beach. The pond is approximately 16 square yards in surface area and may be classified as a mature pond. Its salinity is about six parts per thousand (35 ppt = full seawater) which is on the high side of normal for a mature anchialine pond. Both the nitrogen level and silicate level were slightly higher than those of an average anchialine pond, but entirely within the normal range for a mature pond.

The shallow bottom of the pond at Maniniowali is covered with sandy mud that supports a rich colony of blue green algae (*Schizothrix* sp.) along with the other unidentified freshwater algae. The pond supports a large population of mosquito fish (*Poecilia* sp.) and at least one species of shrimp, probably *Palaemon debilis*. No other shrimp species were seen.

Some of the ponds have been damaged. Diapers and plastic trash have been sited in the anchialine pond at Kua Bay. Rehabilitation of the ponds is planned.

9.6 INFRASTRUCTURE

9.6.1 Roadways

The Queen Ka'ahumanu Highway is the primary arterial highway between Kailua-Kona and Kawaihae and provides the main access route to the park. The only two-wheel drive road within the Kekaha Kai State Park site is a rough poorly-paved road leading from Queen Ka'ahumanu Highway through Kaulana, including a section of State Department of Transportation land, to a parking area at Ka'elehuluhulu Beach and Mahai'ula Bay. Access to Mahai'ula on this road is controlled by a locked gate near the highway.

There is a four-wheel drive road at Awake'e which leads from the highway to Pu'u Kuili, Kaho'iawa Bay, Awake'e Bay, and the locked gate at the border of Makalawena. A four-wheel drive road through private lands in Manini'owali/Kūki'o links the highway with Kua Bay and the coastline. An unimproved dirt road through W.S. Kūki'o land accesses Kikaua Point (Figure 9-3).

There is no internal road connecting the entire park.

KEKAHA KAI STATE PARK

- Draft Environmental Impact Statement •



Road to Mahai'ula from Queen Ka'ahumanu Highway



Jeep road along Pu'u Kuili. To be closed and used for pedestrians.

9.6.2 Traffic

The Queen Ka'ahumanu Highway is the primary arterial highway between Kailua-Kona and Kawaihae and provides the main access route to the park. The major arterial connection to the park is Queen Ka'ahumanu Highway. Queen Ka'ahumanu Highway is the main highway in the South Koholā and Kona districts, running in a north-south direction along the coastline between Kailua-Kona and Kawaihae. It is a State maintained two-lane undivided highway with a 24-foot wide pavement and a posted speed limit varying between 35 to 55 miles per hour (mph). Queen Ka'ahumanu Highway (State Highway 19) provides both regional mobility and access to coastal development in this area. Queen Ka'ahumanu is usually widened where there area at-grade intersections to provide exclusive left-turn lanes and deceleration and acceleration for right-turning movements.

The main park access road at Mahai'ula is of poor quality with numerous potholes and large rocks along the road. The north access roads (to Kua Bay and Awake'e) are suitable for four-wheel drive vehicles only.

9.6.3 Trails

There are several trails throughout the Park which exist in varying conditions. There are older trails which run along the coast, historic trails which run *mauka* to *makai*, as well as more recent jeep trails. Portions of the coastal trail have been eroded. Details of existing trails are described earlier in the PDR portion of this report.

9.6.4 Drainage Facilities

The highly permeable geologic formation in the park area lacks definitive drainage patterns, indicating that surface runoff is virtually non-existent. There are no drainage improvements onsite. Except for localized site-specific cases, there are no plans for drainage improvement.

The park area is generally comprised of highly permeable rocks of the Hualālai volcanic series. Drainage is not considered a problem and aside from grading plans there are no drainage improvements proposed for the park.

At Mahai'ula, site grading of new facilities will be planned to drain rainfall runoff away from buildings. When the main access road is graded, the shape of the roadway prism and the edge of the roadway grading will seek to minimize erosion from the infrequent but periodically severe rainstorms that affect the Kona Coast.

9.6.5 Water Supply and Wastewater Facilities

Water supply and wastewater facilities are described earlier in Section 5.3.

9.6.6 Solid Waste Disposal Facilities

Transfer stations, which have replaced open pit dumping stations, are operated at various locations in the Kona region. The Kona Sanitary Landfill receives solid waste from the area. Park maintenance crews will continue to provide solid waste pick up service in the future.

9.6.7 Power and Communications

There is no electrical service within the park boundaries. Existing electrical service in the area surrounding the park is provided by Hawai'i Electric Light Company (HELCO) via a 69-KV overhead transmission line located approximately 3,000 to 3,300 feet mauka of the Queen Ka'ahumanu Highway.

Power requirements will be evaluated for each facility. Sources that are naturally available such as solar and wind will be the suggested sources unless economic, technical or environmental reasons dictate otherwise. A portable generator should be available for emergency and backup purposes.

Telecommunications will be via wireless systems. Cellular phones and small satellite dishes are recommended. In the future, satellite linkages may be pursued such that some of the educational and cultural activities and events from the activity center may be linked to educational program networks around the world.

9.7 SOCIO-ECONOMIC CONDITIONS

9.7.1 Demographic Characteristics

Kekaha Kai State Park is located in a fast growing region of the State. Between 1990 and 2000, North Kona had a 28.1 percent increase in population. South Koholā showed a population increase of 43.7 percent growth over the same period. Overall, Hawai'i County has grown faster than the State as a whole in the last decade. The 2000 State Data Book reports that the population of Hawai'i County increased 23.6 percent from 1990 to 2000 compared with a 9.3 percent increase for the State (DBEDT, 2000).

9.7.2 Economic Characteristics

The expanding population of the North Kona District is largely attributed to growth in the visitor industry which is expected to continue its expansion. It is also important to note that visitors account for about 12% of the State's de facto population in 1997. Agriculture in the region includes coffee production, cattle ranching, fruit production, macadamia nuts, and vegetable cultivation. Smaller industries include timber, fishing, quarrying operations, construction and printing.

9.7.3 Recreation Demand

The 1989 West Hawai'i Regional Plan, published by the Office of State Planning, states the following:

“There is a critical need for more public outdoor recreation parks, particularly beach parks, in the Kona-Koholā region for use by island residents and visitors. There is and will continue to be a high demand for outdoor recreational facilities.” (p. 26)

The West Hawai'i Regional Plan notes that the region's parks are unevenly distributed, generally small, and typically situated at fair or marginal shoreline locations. These factors result in a limited range of recreational opportunities for residents and visitors. While the supply of outdoor recreation resources is limited, demand for them has rapidly increased. The State Comprehensive Outdoor Recreation Plan (SCORP) (DLNR, 1996) states that the primary component of recreational demand is population trends. Demand for recreational resources has grown with the above-mentioned population growth. Tourism also contributes to the use and demand for recreational facilities. The 1996 SCORP notes that the tourism market is changing and diversifying. Travelers are seeking alternate recreation opportunities with a focus on nature, wellness and cultural and educational activities. Golf and ocean related activities are expected to remain in high demand. During the preparation of the 1996 SCORP a telephone survey was conducted of State residents, with 400 interviews of O'ahu residents and 200 interviews of neighbor island residents.

Residents were asked about recreation areas, facilities needs, and perceived problems. Of the four counties, respondents from the Big Island most strongly voiced the need for additional recreation facilities. Current resident surveys and recent visitor surveys indicate that individuals are most interested in the availability of recreation facilities and the condition of these facilities. Residents and visitors would like more facilities including beach parks, playgrounds, and paths for biking and jogging. Important management issues include park maintenance and cleanliness, safety, and overcrowding at popular recreation sites.

9.8 PUBLIC AND SOCIAL SERVICES AND FACILITIES

9.8.1 Schools

The Kona public school system consists of the Konawaena School complex, Ho'okena Elementary/Intermediate, Kahakai complex, and Kealakehe complex. Private schools also serve students in the region. Park development will positively impact area schools by providing support facilities and outdoor educational opportunities developed for students.

9.8.2 Libraries

The North Kona region is currently served by three public libraries.

9.8.3 Police

The Hawai'i County Police Department provides police protection for the park service area. Park enforcement is also provided by State Department of Land and Natural Resources Division of Conservation and Recreation Enforcement (DOCARE).

9.8.4 Fire

The Hawai'i County Fire Department would provide fire protection services to the park area out of the Kailua-Kona Station. This station is located on Palani Road above Queen Ka'ahumanu intersection approximately 11 miles from the project site. The State Airports Division maintains a crash/rescue unit at Keāhole Airport; however, the equipment and personnel are restricted to airport emergencies.

9.8.5 Health Care Services

The State Department of Health provides emergency ambulance service. Advanced life support ambulance units are located at the Lucy-Henriques Medical Center in Waimea, the Kailua-Kona Fire Station, the South Koholā Fire Station in Waimea, and the Captain Cook Fire Station. The Kailua-Kona Fire Station is equipped for offshore emergencies. The Kona Hospital, operated by the State Department of Health, and the nearest to the project site, has 61 licensed beds, 44 of which are for acute care. The hospital also houses a basic life support ambulance unit.

9.8.6 Postal Services

A total of 33 post offices and stations are located around the island. The federal post office nearest to the project area is located in Kailua-Kona.

9.8.7 Newspapers

Hawaii Island residents receive the two Honolulu daily newspapers in addition to the daily Hawaii Tribune Herald and West Hawaii Today newspapers.

9.8.8 Recreational Facilities

Kekaha Kai State Park provides a variety of outdoor recreational opportunities including swimming, snorkeling, surfing, fishing, camping and hiking. Details are described in Section 4.1

Section 10.0

EIS - Cultural Setting

10.0 CULTURAL RESOURCES

The State of Hawai'i recognizes that Kekaha Kai State Park is rich with cultural history and resources. Archaeological and ethnological studies have been conducted in efforts to better understand the rich history and resource uses throughout Kekaha Kai State Park and to preserve and perpetuate them in the development of the park.

Information in this chapter is also provided in accordance to regulatory requirements of Chapter 343, Hawaii Revised Statutes, as amended by H.B. No. 2895, H.D. 1 of the State of Hawaii Twentieth Legislature and approved as Act 50 which requires that environmental impact statements include the disclosure of the effects of proposed actions on the cultural practices of the community and the State, specifically addressing the effects on Hawai'i's culture, and traditional and customary rights.

10.1 ARCHAEOLOGICAL STUDIES

A number of archaeological studies have been conducted relating to the properties of Kekaha Kai State Park.

An archaeological Reconnaissance Survey: Kekaha Kai State Park, Mahai'ula Section, Kaulana and Mahai'ula *ahupua'a*, North Kona Island of Hawaii was conducted by Alan Carpenter of State Parks in 1998. (Appendix K). This report includes detailed discussion on settlement, based on archaeological evidence in the park and larger Kekaha region.

An archaeological inventory survey was conducted by Tom Dye & Colleagues in 2002 covering the Awake'e *ahupua'a makai* of Queen Ka'ahumanu Highway, and an approximately 1,000 foot wide strip of land that takes in the seaward ends of Manini'owali and Kūki'o 2 *ahupua'a*. (Appendix M).

In addition previous archaeological surveys of the project area have been conducted by Soehren (1982), Cordy (1986), and Athens (1989).

This DEIS report includes details of the archaeological surveys covering Mahai'ula/Kaulana conducted by State Parks and the archaeological inventory of Awake'e, Manini'owali and portions of Kūki'o 2 conducted by Tom Dye & Colleagues. Both reports are included in the Appendices. Highlights of their findings are provided in this chapter. Previous survey reports are available at the State Parks Honolulu Division.

10.2 MAHAI'ULA AND KAULANA

In conjunction with the preparation of a park conceptual plan and a Phase I park development plan, an archaeological reconnaissance survey was conducted of the Mahai'ula section of Kekaha Kai State Park (formerly Kona Coast State Park), North Kona, Hawaii Island. The Mahai'ula section of the park, which the survey addresses, includes all of the *ahupua'a* of Mahai'ula and larger portion of the *ahupua'a* of Kaulana *makai* of the Queen Ka'ahumanu Highway. The reconnaissance survey provides preliminary baseline archaeological information to allow for better resource management, planning and interpretation of the cultural resources within this area of the park. Prior to the implementation of any park improvements, the need for an archaeological inventory survey should be evaluated for the proposed areas of development within the park.

Seventy-one sites were identified during the reconnaissance survey of Mahai'ula and Kaulana. The majority of the sites (41) consist of a single feature, but the remainder (30) are composed of multiple features, and the total number of features which make up those sites is at least 368. The types of features identified are listed in Table 10-1.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

TABLE 10-1 FORMAL FEATURE TYPE, AHUPUA'A OF MAHA'I'ULA AND KAULANA

Sinkhole Shelter	Paved trail	U-shaped shelter	Ground stone depression
Enclosure	Stepping-stone trail	Excavated/cleared pool	Well
Platform	Cleared/paved area	Natural pool	Midden scatter
C-shaped shelter	Wall	Curbed trail	Natural Stone
Rock lined pit	Walled pond	L-shaped shelter	Papamū
Ahu	Cupboard	Burial platform	Petroglyph
Worn foot/horse trail	Shipwreck remnant	Historic salt pan complex	Mortared stone foundation

Inland sites in Mahai'ula, predominately sinkhole shelters and small walled shelters appear to represent prehistoric temporary habitation features. Some of the shelters closest to the shore were utilized for other purposes historically, most notably as trash dumps. All of these temporary habitation features were found within 500 meters of the shoreline. Inland trail remnants paralleling the shoreline appear to have gone out of use before western contact. The near-shore sites back of Mahai'ula Bay appear to have suffered greatly from both natural forces and historic disturbances. This area was the primary settlement area throughout the 20th century. Several sites in this area are obscured by heavy vegetation and will require further investigation to evaluate their condition, function and age. Site T70 appears to be a habitation complex representing the late prehistoric / early historic period. Some features at the southern end of this site complex were utilized well into the 20th century. Historic use is indicated by the limestone mortar used in Features K1 and M1. Additional shoreline sites north to T70 need further evaluation to make temporal and functional determinations. See Appendix K for details regarding feature locations and descriptions.

The most common features recorded in Kaulana are petroglyphs (about 156) and papamū (22). This indicates that these features continued to be fashioned in the historic period (which is also indicated by the numerous name petroglyphs). The vast majority of sites in Kaulana are within 200 meters of the shoreline, and indicate historic habitation in this area. The shoreline of Kaulana appears to have been abandoned as a settlement by the end of the 19th century. However, the area continued to be used for activities such as salt manufacture and commercial recreation activities well into the 20th century. Several sites in this area are heavily overgrown with vegetation and need further work before assumptions can be made as to their age and function. Some of the sites nearest the shore may have been spared the wrath of the 1801 lava flow and may therefore date from the prehistoric period. The only inland site recorded on the 1801 flow are *mauka-makai* trails and a petroglyph field along one of those trails. North of the historic lava flow, several temporary habitation sites were located. This would seem to indicate that use of inland features ceased at or prior to 1801, as no similar features were reconstructed following the lava flow event.

Virtually all of the recorded sites have important cultural and interpretive value that will greatly enhance park programs. It is recommended that all the sites recorded be preserved for their cultural value.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

The development of interpretive materials will emphasize both the natural marine and geological features of the area, as well as the cultural features, and efforts will focus on educating the public about the importance of preserving and protecting those resources for future generations. Development of a scale necessary to accomplish the park goals can easily be planned around all existing cultural sites.

In addition, the need for an inventory level of investigation should be evaluated prior to the development of park improvements. Specifically in the area surrounding the parking lot at Ka'elehuluhulu beach, where the heaviest park use presently occurs. Sites have been identified in this area and should be further studied to determine whether or not subsurface testing is possible and / or required.

It is unlikely that construction activities planned in or near the historic house complex situated at the northern end of Mahai'ula Bay will impact any archaeological sites, since the area immediately surrounding the house complex is heavily disturbed by historic activities related to development of the Magoon house complex. Additional surveying may not be necessary.

However, after the project areas are more accurately defined through completion of construction plans, an inventory level survey of these two areas (Ka'elemakule and Mahai'ula complex), including test excavation where possible, will be conducted by the State Parks archaeologists. A research design for proposed archaeological testing in conjunction with the inventory survey will be submitted to the Historic Preservation Division for approval prior to any excavations taking place. The remainder of the sites in this section of the park should be monitored for impacts due to park use and evaluated for additional research value in conjunction with the development of an overall interpretive plan for Kekaha Kai State Park. In particular, archaeological testing should occur at Site T70 in the future in order to answer research questions and to aid in the preparation of interpretive materials for the area. Additionally, sites that are outside of the proposed inventory survey areas, but are within anticipated heavy-use areas of the park, should be more adequately recorded and mapped in order to appropriately monitor the impacts of park use and site visitation.

If the *mauka-makai* trail traversing Kaulana is opened up to public foot traffic, a complete documentation of the extensive historic petroglyph field along this path should be conducted prior to allowing heavy site visitation.

Several features have been tentatively identified as burials. They should be monitored for site disturbances, and protective devices should be used to minimize public disturbances of these areas.

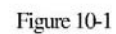
10.3 ARCHAEOLOGICAL INVENTORY SURVEY - AWAKE'E, MANINIOWALI / KŪKI'O 2

At the request of Group 70 International, T.S. Dye & Colleagues, Archaeologist Inc. in cooperation with the Hawaii State Parks Division has completed an archaeological inventory survey of portions of Kekaha Kai State Park in the North Kona district of Hawai'i Island. Fieldwork was carried out between March 6 and April 30, 2002 and June 19--21, 2002 by experienced four-person crews. The goal of the survey project was to collect baseline data needed by the State Parks Division to manage historic sites in the park. This was done primarily by drawing 1:100 and 1:50 scale plane table maps of habitation feature clusters, supplemented by descriptions and photographs of isolated features. Maps and descriptions were geo-referenced using global positioning system equipment and software. The goal of the State Parks Division is to preserve all of the identified archaeological features.

The project area of approximately 583 acres comprises the northern portion of Kekaha Kai State Park, north of the privately held *ahupua'a* of Makalawena. It includes the Awake'e *ahupua'a makai* of Queen Ka'ahumanu Highway, and an approximately 1,000 ft.\ wide strip of land that takes in the seaward ends of Manini'owali and Kūki'o 2nd *ahupua'a*. The survey areas are portions of the park that have been identified as potentially desirable locations for public park facilities. They include planned improvement areas and road and trail corridors (Figure 10-1) with a combined area of approximately 120 acres.

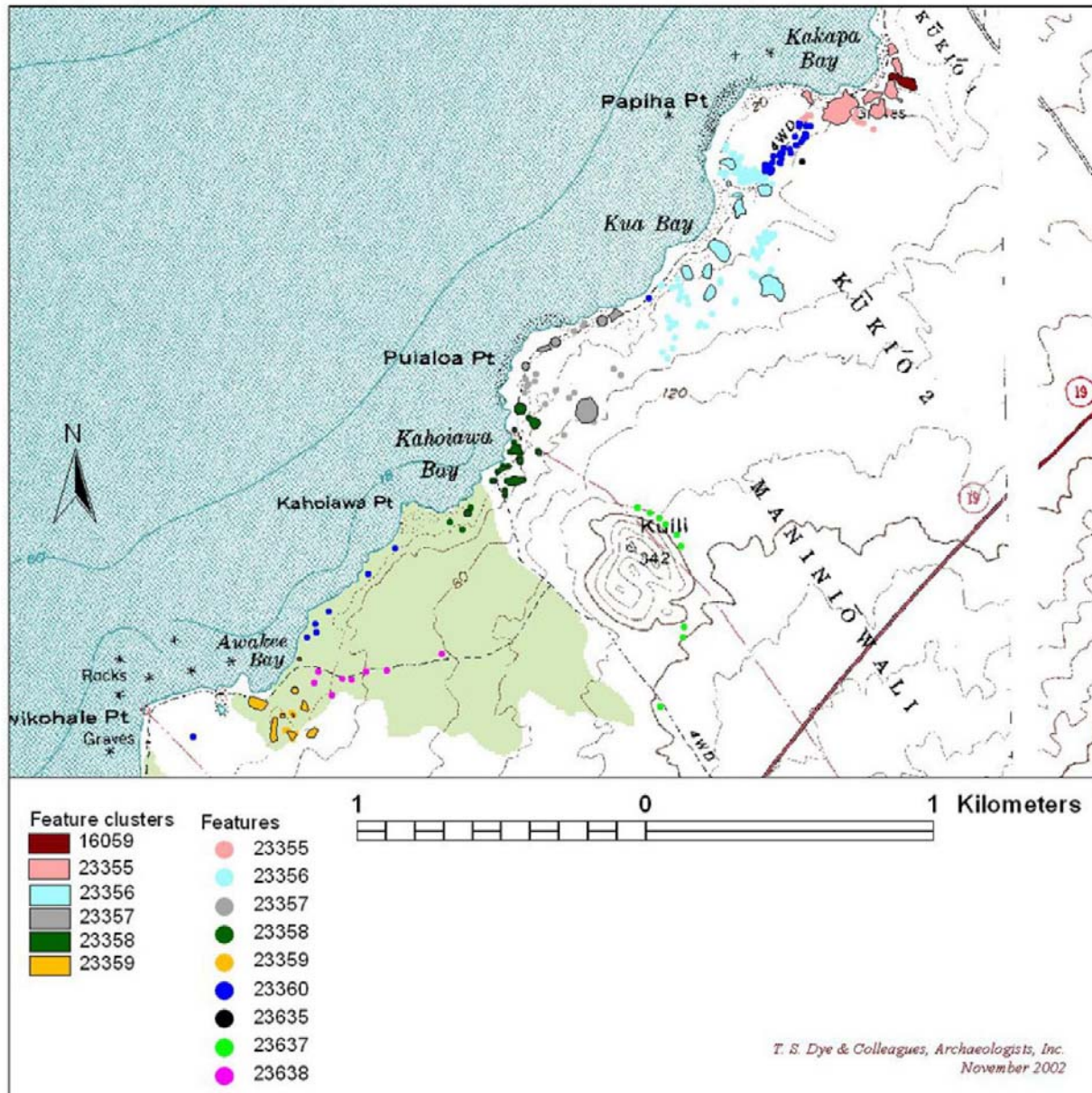
A total of ten sites comprising more than 1,000 features were recorded (Figure 10-2). Five of the sites are traditional Hawaiian settlements, which range in size from small villages to settlements of one or a few households. The largest and best-preserved site, 50--10--18--23355, is located at Kakapa Bay. A total of 359 features was recorded here. Settlement pattern analysis indicates that this site comprises seven household clusters preferentially located on 'a'ā lava flows near the cobble and white sand beach. Also present are a *heiau* reported to have been one of Kamehameha's and several large boulders and lava slabs that have been bashed with cobble hammerstones to expose an interior layer of red, often ropy, lava. These features, which lack an obvious function but which required considerable effort to complete, are tentatively interpreted as *ku'ula*, fishing shrines, important features of a coastal settlement in which the bulk of economic activities were directed toward fishing. The *heiau*, which is the largest religious structure recorded during the survey, is one indication of the local importance of the Kakapa Bay community. Another is the network of transportation routes that serve the settlement. Four major trails terminate at the village: trail site 50--10--18--16059 originates inland and enters the village from Kūki'o 1st *ahupua'a* to the north; two branches of trail site 50--10--18--5337, which originates inland and south of the village, enter over the 'a'ā lava immediately *mauka*; and the coastal trail serves the village from both the north and the south. The remnants of a canoe shed near the *heiau* indicate that the village was also a terminus for travel over water. A traditional Hawaiian cemetery, located outside the survey area, immediately *mauka* of the site's residential core, is marked on the USGS Makalawena quadrangle map. A small anchialine pond at the toe of an 'a'ā flow likely provided fresh water. Site 50--10--18--23355 is significant as a well-preserved example of a traditional Hawaiian coastal village and for the information on Hawaiian history and prehistory that it has yielded and is likely to yield in the future. It might also be significant for its association with the life of Kamehameha I, although this association needs to be substantiated through the discovery of additional information about Kamehameha's relationship to the *heiau* and the village. The entire site offers an outstanding opportunity for interpretation and display.

• Draft Environmental Impact Statement•



KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •



KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

Site 50--10--18--23356 is the remains of a small village now badly disturbed by bulldozing, off-road excursions by four-wheel drive vehicles, and the activities of campers and others at the recently popular sand beach at Manini'ōwali, or Kua, Bay. A total of 348 features was recorded here. Settlement pattern analysis identified nine residential clusters located on the 'a'ā flow at the north end of the bay, along the sandy margin of the *pāhoehoe* flow at the central and southern ends of the bay, and on the *pāhoehoe* flow itself generally associated with relatively large lava tube caves. The habitation clusters here are more dispersed than at Kakapa Bay, but the focus of settlement seems to have been the north end of the bay where a canoe shed at the edge of an 'a'ā flow overlooks a relatively large, but now partially filled, anchialine pond, and a small, stratified cultural deposit is preserved at the edge of a sand dune. Religious structures consist of several small shrines, the most prominent of which is located well inland, away from the coast. No large *heiau* are present today. Human burial seems to have been dispersed, as well, with interment in a lava tube cave, under a large 'a'ā boulder, and probably at several small above-ground structures, which were not dismantled to search for bones. The village was served by the coastal trail from the north and south, but no known *mauka-makai* trail terminates at Manini'ōwali Bay. The settlement pattern information suggests that site 50--10--18--23356 was less important traditionally than site 50--10--18--23355 at Kakapa Bay, and the site's integrity has been compromised by a range of modern activities. It is significant for the information on Hawaiian history and prehistory that it has yielded and is likely to yield. Portions of the site offer some potential for interpretation and display, although the level of previous disturbance and the fragility of the disturbed cultural remains at the north end of the bay and behind the south end, where looters have ransacked habitation caves, place limits on what might be done. The portion of the site with the greatest potential for interpretation and display is the *mauka* cluster, which includes a well-built enclosure that incorporates upright *pāhoehoe* slabs probably imported from some distance, and a shrine with several water-worn boulders, one of which vaguely resembles a stylized human face.

Site 50--10--18--23357 was assigned to eight small clusters of mostly small, probably temporary habitation features and some isolated features located along the coastal trail at Puilaloa Point. A total of 75 features were recorded. The coastline here is rocky, making canoe access difficult; a canoe shed, however, is located on a small patch of sand on the point, indicating that the place was regularly accessed from the sea. In addition to the coastal trail, which enters the site from the north and south, several well-worn *mauka-makai* trails lead inland from individual clusters, beyond the survey area, and have not been followed out. The survey area here was limited to the area surrounding the coastal trail, but observations during fieldwork indicate that the *pāhoehoe* flows inland are heavily modified through the construction of numerous pits, which appear here to have supplied stone for building material. An inventory survey of these inland areas is needed to establish the cultural context for the recorded features along the coast. One cluster of features along the trail, now in poor condition, might have been a *heiau*, but the evidence in support of this interpretation is slim. This site is significant for the information on Hawaiian history and prehistory that it has yielded and is likely to yield. The coastal features offer some limited opportunities for interpretation and display; the canoe shed is readily visible and visitors hiking the coastal trail will appreciate the small patch of sand upon which it was built. Although the inland pit areas are outside the survey area, and were not recorded in detail, they appear to be good examples of *pāhoehoe* quarries and would likely yield good opportunities for interpretation and display.

Traditional Hawaiian habitation at site 50--10--18--23358 at Kaho'iawa Bay differs from the sites farther north. Habitation here centers on single, relatively large structures, rather than the clusters of smaller features recorded at Manini'ōwali and especially Kakapa Bay. Sixty-six features were recorded and grouped into a dozen clusters. The site is located on and adjacent to the cinderlands *makai* of Pu'u Kuili, a unique environment along this section of coast. Although the cinderlands offer some agricultural potential, especially in contrast to the barren lava flows that flank the Pu'u, evidence for traditional Hawaiian agriculture is limited and equivocal. If agriculture were important here in traditional Hawaiian times, then it has left little or no trace in the cinderlands. Instead, the features here are oriented to the sea and its resources, exemplified most strongly by two features, one with a conch shell trumpet, interpreted as fishing lookouts. The site is served by the coastal trail and probably by trail site 50--10--18--5351,

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

which originates inland and crosses an 'a'ā flow to the north flank of Pu'u Kuili, where the trail is lost in the cinders before it reaches the *mauka* edge of the site. The integrity of features at this site has been compromised by modern activities, including the construction of new features by fishermen and campers and cultivation of marijuana. The site is significant for the information on Hawaiian history and prehistory that it has yielded and is likely to yield. The site offers little opportunity for interpretation and display.

Site 50--10--18--23359 at the south end of Awake'e Bay is located adjacent to a large set of anchialine ponds near the boundary with Makalawena ahupua'a. Features here are grouped into nine clusters at the south end of the bay, following a scheme used during a reconnaissance survey of the property in the 1980s. The features evidence a mix of traditional Hawaiian and modern habitation; a large complex of enclosures at the southern end of the bay, now being destroyed by four-wheel drive vehicle traffic to Makalawena, includes a mortar-lined cistern that was built sometime prior to the first time it was recorded in the 1930s. Inland from the coast, on and extending from the edge of an 'a'ā flow, is a large habitation platform and associated graves and/or shrines, a well-built, nearly square enclosure, and a 75 m long, narrow structure described as a causeway for lack of a better term. The function of this latter feature is enigmatic; the ground around it is not wet so it seems certain that it did not function as a causeway, and the traditional Hawaiian feature that it most resembles, the *hōlua* slide, is generally situated on more steeply sloping ground. This feature deserves further, in-depth study. Inland from the site, outside the survey area, is a habitation cluster built primarily on the edge of an 'a'ā flow adjacent to a very large, thoroughly looted habitation cave. The inland location of this habitation cluster, some 400 m from the shore, is unusual for the Kekaha coast, and was undoubtedly determined by the location of the cave. The site is served by the coastal trail and by a *mauka-makai* trail that enters Awake'e ahupua'a from the south, well inland of the site. The site is significant as a well-preserved example of a traditional Hawaiian settlement that was inhabited into the historic period, and for the information on Hawaiian history that it has yielded and is likely to yield. The site presents good opportunities for interpretation and display, although additional research into the function of specific features is needed to yield evidence for interpretation. An inventory-level survey of the many habitation features located inland of the site should also be completed before the area is opened further to the public.

The trail that connects the coastal habitation sites, short branches off the main trail to habitation clusters, and the many small features found on either side of the trail in between inhabited areas, were assigned to site 50--10--18--23360. The trail is not marked along much of its traverse of the project area. Short paved sections are present in several areas, but large sections appear to have been washed out by waves. The longest intact section cuts across the 'a'ā flow that formed Papiha Point between Kakapa and Manini'ōwali Bays, well inland from the coast. This section of trail is maintained and modified by pedestrians, many of whom are fond of marking the trail with white coral cobbles. This section of the trail through the 'a'ā flow is associated with many small features, primarily small overhang shelters that yield some shade for a portion of the day and small pits excavated into the 'a'ā clinkers. These features might represent temporary rest spots or storage features, used by travelers, but such functions seem odd given the short distances to presumably inhabited villages both north and south. Lack of cultural deposit at these small features makes them more difficult to interpret; they do, however, indicate that travel along the trail was often interrupted by short forays off the trail. The trail extends out both ends of the project area, connecting its settlements with other settlements both north and south. The site is significant because it has yielded and is likely to yield information on Hawaiian history and prehistory, and because of its important value to native Hawaiians owing to its association with the cultural practice of traveling along the Kekaha coast. The site is an important component of any program of interpretation and display at the park.

Four other site numbers were assigned to isolated features and groups of features. Site 50--10--18--23635 is an isolated probable burial platform located well outside the survey area. It was described, but no excavations were carried out to test the possibility that the platform contains human bones.

Site 50--10--18--23636 is a mound at the top of Pu'u Kuili that might represent a burial site indicated on historic maps. This mound has been modified repeatedly and extensively over the last two years and there is no solid evidence linking it to the historically recorded burial here, and it might represent the remains of an old survey point established at the top of the Pu'u. No excavations were carried out to determine whether the mound contains human bones. Until further information on the location of the historic burial at Pu'u Kuili is obtained, this site should be treated as significant for its important value to native Hawaiians as a burial site of ancestral bones.

Site 50--10--18--23637 is a group of small features located along a proposed road corridor near Pu'u Kuili. One of the features is a burial site in which secondarily deposited human bones have been loosely covered with stones. The secondary burial feature does not appear to be ancient and it might be that the bones were moved here after they were uncovered elsewhere. Although the bones are located distant from modern settlements, the nature of their interment is not typical of traditional Hawaiian burials and it might be that they are the remains of an ethnic group other than native Hawaiian. The features in this cluster are significant for the information on Hawaiian prehistory and history that they have yielded and are likely to yield. The secondary burial feature might have important value to native Hawaiians or to another ethnic group of the state.

Site 50--10--18--23638 is another group of small features located along a proposed road corridor leading from Pu'u Kuili to Awake'e Bay. These features are significant for the information on Hawaiian history and prehistory that they have yielded and are likely to yield.

Information on the chronology of settlement and the nature of subsistence activities was collected at excavations carried out at three looted caves and at habitation features at Kakapa and Manini'ōwali Bays. 14C dates on short-lived materials support the idea established by previous archaeological work along the coast that settlement here occurred relatively late in traditional Hawaiian times, around A.D. 1400, or perhaps later. Subsistence activities were geared almost exclusively to fishing, and a diverse catch of mostly small inshore fishes comprised the bulk of the meat diet. Seabirds, primarily Bulwer's petrel, played a relatively minor role in subsistence, and the only remains of pig and dog were probably brought to the site as raw materials for fishhook manufacture. Large faunal collections from the looted caves yielded evidence interpreted as indicating operation of a long-standing *kapu* against the capture of aholehole, a fine food fish that is abundant in near-shore waters along the coast.

10.4 ORAL HISTORY

"Kekaha Wai 'Ole O Na Kona," a report on archival and historical documentary research, and oral history interviews for Kekaha Kai State Park, ahupua'a of Kaulana, Mahai'ula, Makalawena, Awake'e, Manini'ōwali, and Kūki'o – District of North Kona, Island of Hawai'i was prepared by Kepa Maly, Kumu Pono Associates. This historical and archival documentary research was conducted from August 7th to October 17th, 1997. The study focuses on recently translated native Hawaiian accounts – written by former residents of Kekaha and historical records which have been recently identified as valuable sources of information for the study area lands. The study provides readers with a general overview of Hawaiian colonization, population expansion, and land management practice in the Hawaiian Islands and includes interviews from several oral history studies conducted or transcribed by the author. The complete report is provided in Appendix L.

The oral interviews focused on eliciting information from knowledgeable individuals regarding traditional Hawaiian lore and practices, spiritual beliefs, the presences of traditional sites, land and resource use, and subsistence practices. Interviewees were encouraged to offer recommendations for long-term protection and interpretation of the cultural and natural resources of Kekaha Kai State Park. Transcriptions of accounts from native residents of Kekaha, published in the Hawaiian language newspaper also provide a description of the resources and history, and a glimpse of how people could have carried on a satisfactory existence in such a rugged land.

Highlights of the findings and recommendations are reiterated here.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

As a result of the literature research and oral historical interviews, a rich ethnographic resource has been collected for the lands Kaulana, Mahai'ula, Makalawena, Awake'e, Manini'owali and Kūki'o. Legendary and historical accounts provide *ahupua'a*-specific documentation of sites, practices, and customs associated with the families and lands now included within Kekaha Kai State Park. The interviews also demonstrate the continuation of certain aspects of traditional knowledge and practices associated with the lands, as handed down over the generations. Interviewees express deep "cultural attachment" to the lands, sites, resources, and place names of Kekaha.

Cultural attachment: embodies the tangible and intangible values of a culture – how a people identify with, and personify the environment around them. It is the intimate relationship developed over generations of experience that people of a particular culture feel for the sites, features, phenomena, and natural resources etc. that surround them, their sense of place. This attachment is deeply rooted in the beliefs, practices, cultural evolution, and identity of a people. The significance of cultural attachment in a given culture is often overlooked by others whose beliefs and values evolved under a different set of circumstances (cf. James Kent, Cultural Attachment: Assessment of Impacts to Living Culture, September 1995).

Recommendations elicited during the oral history interview discussions provide the Division of State Parks with suggestions for long-term management objectives, including historic site preservation, protection of natural resources, and interpretive programs in the park:

1. "Kekaha Kai" is not a name that the *kūpuna* used for the land – the name "Kekaha" already tells people that it is a coastal zone. It is requested that the Division of State Parks simply use the regional name "Kekaha" – i.e. Kekaha State Park.
2. There is a strong cultural attachment and historical pride among the *kūpuna* for the native place names of lands within the park – be they *ahupua'a* names or names which identify specific locations. It is requested that the Division of State Parks use the individual *ahupua'a* and other place names throughout the park – at interpretive wayside situations and in interpretive and educational materials.
3. Protect Kolomikimiki, the Ka'elemakule burial cave parcel. The parcel was conveyed to the Catholic Church without full family concurrence. It is requested that the State of Hawai'i and Division of State Parks monitor land tenure of the "Burial Lot". Should the Catholic Church ever seek to dispose of Kolomikimiki, Ka'elemakule family members would like to be notified. The Ka'elemakule descendants and *kūpuna* who participated in the study support any efforts that the State of Hawai'i may make to incorporate Kolomikimiki into the larger Park parcel and protecting it in perpetuity. Because of the sensitive nature of the site, it is asked that Kolomikimiki be monitored and that visitation to the site be limited to family members. But, because of the rich traditions of Kolomikimiki, its stories – without specific location references – should be a part of the parks interpretive program.
4. It is urged that all additional archaeological sites including others that are tentatively identified as burial features be protected (cf. Carpenter et al. 1998).
5. It is noted that "Kalāhikiola," the c. 1882 Ka'elemakule house is an important historical / cultural feature – a part of the cultural landscape of Mahai'ula – with a rich history attached to it. Its restoration and protection is important to the history of the land.
6. The resident park steward program which has been initiated in the park is a good one. The on-site presence will help park users understand the unique history of Kekaha, and inform them of appropriate use and visitation of the park's natural and cultural resources. It is requested that the Division of State Parks continue to support the program.
7. Pohakuolama (also referred to as "Pohakuwahine" the female rock), situated offshore, fronting the old Ka'elemakule house, is a sacred site and important cultural feature. It is requested that Pohakuolama

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

be protected – e.g. there be no diving and playing from the stone, and boats not be allowed to anchor to the stone etc.

8. It is requested that the Division of State Parks work with other State Agencies to ensure protection of the Kekaha fisheries. Marine resources in the park:
 - a) need to be protected from commercial aquarium fish collectors; and
 - b) subsistence fishing as practiced by native Hawaiian fishermen needs to be protected.
9. Sites and resources of the coastal region are directly tied to those of the uplands. It is recommended that interpretation of the cultural and natural resources of the park include the broader, native *ahupua'a* management system – an integrated resources management approach. It is also urged that the interpretation of the traditions and history of Kekaha and the park lands be inclusive of the diverse accounts of the land. Even in cases, where one account may differ from another, there is richness in the diversity, and the accounts help to demonstrate the dynamic qualities of the culture.
10. Caution is urged in development of a landscaping plan. Should native species be planted to replace alien plants, prudent thinning of the existing overstory should be undertaken so as to protect the new plantings, giving them time to become established. It is also noted that the *kiawe* has become a part of the landscape, and that it has a role in the lands of Kekaha.
11. The Division of State Parks is to be commended for its efforts in working with *kūpuna* and families who have generational residency ties to Kekaha and the park lands. It is asked that this work be continued, and that consultation occur as a part of the management and decision-making processes in Kekaha Kai State park.

Another important concern raised by the Task Force was the need for ongoing consultation with the *kūpuna* and resource persons during the development and implementation of the interpretive programs. Various program activities will seek the participation of these persons as docents, teachers, and *kūpuna* which will promote historical accuracy and interpretations closer to source references.

Section 11.0

EIS - Relationship to Land Use Plans, Policies and Controls

11.0 RELATIONSHIPS OF THE PROPOSED PROJECT TO EXISTING PLANS AND POLICIES

11.1 OVERVIEW

An important consideration in evaluating the potential effects of a proposed action on the environment is how it may conform to or conflict with approved or proposed land use plans, policies and controls for the affected area. The evaluation of the relationship of the planned Park improvements to State and County land use plans, policies and controls is presented below. These include the Hawai'i State Plan, the Hawai'i State Plan Functional Plans, the County of Hawai'i General Plan, the Hawai'i Coastal Zone Management Program, and the County of Hawai'i Special Management Area policies and rules. Selection of specific objectives and policies to be addressed are based on their relevance to the proposed project in terms of land, use location and planning.

11.2 HAWAII STATE PLAN

It is the goal of the Hawai'i State Plan to achieve "a desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people." (Hawaii State Plan, Chapter 226, Hawaii Revised Statutes) Objectives and policies of the State Plan which are relevant to Kekaha Kai State Park include the following:

Sect. 226-11: Physical Environment – Land-based, Shoreline, and Marine Resources

- (a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:
 - (1) Prudent use of Hawai'i's land-based shoreline and marine resources.
 - (2) Effective protection of Hawai'i's unique and fragile environmental resources.
- (b) To achieve the land, air, and water quality objectives, it shall be the policy of the State to:
 - (1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.
 - (3) Take into account the physical attributes of areas when planning and designing activities.
 - (4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.
 - (5) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.
 - (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.
 - (8) Pursue compatible relationships among activities, facilities, and natural resources.
 - (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

Sect. 226-12: Physical Environment – Scenic, Natural Beauty, and Historic Resources

- (a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.
- (b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:
 - (1) Promote the preservation and restoration of significant natural and historical resources.
 - (2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.
 - (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean scenic landscapes, and other natural features.
 - (4) Protect those special area, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.
 - (5) Encourage the design of developments and activities that complement the natural beauty of the islands.

Sect. 226-13: Physical Environment – Land, Air and Water Quality

- (a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:
 - (1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.
 - (2) Greater public awareness and appreciation of Hawai'i's environmental resources.
- (b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:
 - (1) Foster educational activities that promote a better understanding of Hawai'i's limited environmental resources.

- (2) Promote the proper management of Hawai'i's land and water resources.
- (3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.
- (8) Foster recognition of the importance and value of the land, air and water resources to Hawai'i's people, their cultures and visitors.

Section 226-23: Socio-Cultural Advancement – Leisure

- (a) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.
- (b) To achieve the leisure objective, it shall be the policy of this State to:
 - (1) Provide a wide range of activities and facilities to fulfill the cultural, artistic, recreational needs of all diverse and special groups effectively and efficiently.
 - (3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.
 - (4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historic, geological, or biological values while ensuring that their inherent values are preserved.
 - (5) Ensure opportunities for everyone to use and enjoy Hawai'i's recreational resources.
 - (6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.
 - (10) Assure adequate access to significant natural and cultural resources in public ownership.

Section 226-25: Socio-Cultural Advancement – Culture

- (a) Planning for the State's socio-cultural advancement with regard to culture shall be directed towards the achievement of the objective of the enhancement of cultural identities, traditions, values, customs, and arts of Hawaii's people.
- (b) To achieve the culture objective, it shall be the policy of this State to:
 - (1) Foster increased knowledge and understanding of Hawaii's ethnic and cultural heritages and the history of Hawaii
 - (2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawaii's people and which are sensitive and responsive to family and community needs.
 - (3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawaii.

Section 226-27: Socio-Cultural Advancement – Government

- (a) Planning for the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the objectives:.
- (b) To achieve the culture objective, it shall be the policy of this State to:
 - (5) Assure that government attitudes, actions and services are sensitive to community needs and concerns.

Discussion:

Planning for Kekaha Kai State Park was conducted with all these policies in mind. As a wilderness park, these values are inherent in the conceptual master plan. Site planning considered all the constraints in designating developments and their placement. Management policies will ensure resource protection and long-term sustainability.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

An ethnographic study was conducted in addition to the normal archaeological study to deepen the understanding of the resources. The protection and enhancement of these resources were one of the key guiding principles in park development.

The land and water resources of the project will be properly managed. All planned improvements will be consistent with and contribute to the implementation of these objectives and policies. Their basic intent is to support prudent use and management of natural resource areas for recreational purposes. New facilities are being planned and designed in a manner that takes into account and is compatible with the physical attributes of the different areas throughout Kekaha Kai State Park and that avoids any costly or irreparable environmental damage. Existing views and vista points will be preserved.

11.3 STATE FUNCTIONAL PLANS

The Hawai'i State Plan Functional Plans include objectives and policies to implement the broad goals of the Hawai'i State Plan.

11.3.1 State Conservation Lands Functional Plan

- Objective IIC: Enhancement of natural resources
- Policy IIC(2): Expand and enhance outdoor recreation opportunities and other resource uses.
- Action IIC(2)a: Upgrade and enhance the State's outdoor recreational infrastructure of roads, trails, and shelters.
- Action IIC(2)e: Provide and improve public access to the shoreline and to mauka areas as condition on leases, executive orders, easements, and other encumbrances on lands with recreation[al] and/or educational potential.
- Policy IID(1): Develop and expand resources to protect natural shorelines and wilderness recreation areas.
- Policy IID(3): Develop recreational and archaeological resources on the shoreline and mauka areas.
- Action IID(3)a: Acquire and/or develop areas for historic preservation.
- Action IID(3)b: Establish a State-wide trails and access system.
- Objective IIIA: Expansion and promotion of a public conservation ethic through education.
- Action IIIA(1)b: Develop and implement ongoing interpretive program to promote an appreciation and understanding of unique natural and cultural resources.

11.3.2 State Recreation Functional Plan

- Policy I-A(1): Acquire additional beach parkland and rights-of-way to remaining undeveloped shorelines to provide increased capacity for future public recreational use.
- Policy II-A(3): Proceed with planning, acquisition, and developments of trails.
- Policy III-D(3): Effectively manage and maintain existing public access ways.
- Policy IV-B(2): Protect, preserve, restore, and enhance recreational fishery resources.
- Policy V-C(3): Explore innovative ways to manage and maintain recreational resources.
- Action V-C(3)b: Expand "adopt-a-park", "adopt-a-beach", and "adopt-a-trail" programs to get the public involved in caring for public recreation facilities.
- Objective VI-A and Policy VI-A(1): Increase recreational access and opportunities in Hawaii's wetlands. Identify existing wetlands with the potential for recreational development without significantly affecting wetland resources, with an emphasis on passive recreation and education.
- Policy VI-C(1): Assure the protection of the most valuable wetlands in the state through fee acquisition, land banking, cooperative agreements, conservation easements, cooperation with private landowners, public education, and/or other strategies. Ōpa'e'ula Pond at Makalawena is listed as a Top-priority wetland to be protected.

11.3.3 State Historic Preservation Functional Plan

- OBJECTIVE C: Management and Treatment of Historic Properties.
- Policy C.2.: Encourage the preservation and maintenance of historic properties through economic incentives and support.
- Action C.2.d: Encourage State and County agencies to maintain and preserve historic buildings under their administration.

11.3.4 State Tourism Functional Plan

- Policy II.A.7: Improve the quality of existing parks and recreational areas, and ensure that sufficient recreational areas—including scenic byways and corridors—are available for the future.
- Action II.A.7.c. Acquire beaches (list includes Kua Bay) for expansion of existing beach parks, and development of future beach parks.
- Objective III.A: Enhancement of respect and regard for the fragile resources which comprise Hawaii's natural and cultural environment. Increased preservation and maintenance efforts.
- Policy III.A.2: Assist in preserving, perpetuating, and interpreting cultural, historic and archaeological resources.

Discussion:

Kekaha Kai State Park provides outdoor recreational opportunities to the public. The plan outlines strategies to preserve natural and cultural resources throughout the Park while providing enhanced and educated outdoor recreational opportunities. Interpretive programs will be provided to promote an appreciation and understanding of the natural and cultural resources of Kekaha Kai. Archaeological and recreational resources will be protected. Facility improvements will expand opportunities for ocean and related coastal recreational activities. Improved maintenance and management of trails will facilitate the development of the Ala Kahakai as part of the statewide trail and access system.

11.4 COUNTY OF HAWAII GENERAL PLAN

The County of Hawai'i General Plan designates the entire Kekaha Kai State Park site as open lands. This designation promotes parks and natural area usage. Additionally, the following General Plan goals and policies support the development of the park.

Historic Sites

Goals:

- Access to significant historic sites, buildings and objects of public interest should be made available.

Policies:

- Agencies and organizations, either public or private, pursuing knowledge about historic sites should keep the public apprised of projects.
- The County of Hawai'i shall require both public and private developers of land to provide a historical survey to the clearing or development of land when there are indications that the land under consideration has historical significance.
- The County of Hawaii shall also aid in the development of a program of public education concerning historic sites.
- Signs explaining historic sites, buildings and objects shall be in keeping with the character of the area or the cultural aspects of the feature.

Natural Beauty

Goals:

- Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.
- Maximize opportunities for present and future generations to appreciate and enjoy natural and scenic beauty.

Policies:

- Increase public pedestrian access opportunities to scenic places and vistas.
- Access easement to public or private lands which have natural or scenic value shall be provided or acquired for the public.

Natural Resources and Shoreline

Goals:

- Provide opportunities for the public to fulfill recreational, economic, and educational needs without despoiling or endangering natural resources.
- Protect and promote the prudent use of Hawaii's unique, fragile, and significant environmental and natural resources.

Policies:

- The shoreline of the island of Hawaii shall be maintained for recreational, educational, and/or scientific uses in a manner that is protective of resources and is of the maximum benefit to the general public.
- The shoreline shall be protected from the encroachment of man-made improvements and structures.
- The County shall encourage public and private agencies to manage the natural resources in a manner that avoids or minimizes adverse effects on the environment and depletion of energy and natural resources to the fullest extent.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

Recreation

- Public access to the shoreline shall be provided in accordance with an adopted program of the County of Hawaii.
- Establish public access to and the development of shoreline regions along the North Kona Coast so as to provide recreational opportunities in areas such as...Kūki'o and Kakapa Bays, Kua Bay, Kaho'iawa, Makalawena and Mahai'ula.
- Protect Ōpae'ula...Ponds as natural areas.
- Encourage the development of historic trails

Economy

- The natural beauty of the area should be recognized as a major economic and social asset. This resource should be protected through appropriate review processes when development is proposed.

Discussion:

Kekaha Kai State Park will be maintained as an open natural park. The natural beauty throughout the park is recognized as an asset. A number of improvements to public shoreline access are planned, including vehicular access from Queen Ka'ahumanu Highway to Kua Bay and Mahai'ula; pedestrian access along the coastal shore and from nearby residential developments. The plan calls for the protection and education of the anchialine ponds throughout the park.

An archaeological reconnaissance survey has been conducted by the Division of State Parks and its findings and recommendations are being submitted to the State Department of Land and Natural Resources (DLNR) Historic Preservation Division for review and approval. The general policy of the State Parks is to preserve cultural and historic resources throughout the Park to the maximum extent possible. In addition to preservation, interpretive educational programs regarding the cultural and environmental resources of the Park are also planned.

11.5 HAWAII COASTAL ZONE MANAGEMENT PROGRAM

The objectives of the Hawai'i Coastal Zone Management Program, Section 205A-2, HRS, are to protect valuable and vulnerable coastal resources such as coastal ecosystems, special scenic and cultural values, and recreational opportunities. The objectives of the program are also to reduce coastal hazards and to improve the review process for activities proposed within the coastal zone.

Portions of the project site are within the Special Management Area and will require the County of Hawai'i's approval of a Special Management Program Area Use Permit. Issuance of an SMA Use Permit is based on a development proposal's consistency with the objectives, policies and review guidelines specified in CZM Law. Relevant objectives, policies and guidelines, and the relationship of the proposed improvements to them, are presented and discussed below.

Recreational Resources

- Objective: Provide coastal recreational opportunities to the public.
- Policy B: Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area by:
- (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas.
 - (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value.
 - (iv) Encouraging expanded public recreational use of county, State and federally owned or controlled shoreline lands and waters having recreational value.

Historical Resources

- Objective: Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
- Policy A: Identify and analyze significant archaeological resources.
- Policy B: Maximize information retention through preservation of remains and artifacts or salvage operations.

Scenic and Open Space Resources

- Objective: Protect, preserve and, where desirable, restore, or improve the quality of coastal scenic and open space resources.
- Policy A: Identify valued scenic resources in the coastal zone management area;
- Policy B: Insure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- Policy C: Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources.

Coastal Ecosystem

- Objective: Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.
- Policy B: Preserve valuable coastal ecosystems of significant biological or economic importance.

Coastal Hazards

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion and subsidence.

Discussion:

The proposed plans for the Kekaha Kai State Park will expand recreational opportunities for the public. No substantive alteration of existing natural landforms will result. None of the planned improvements will affect the Park's existing public views or shoreline open space and scenic resources.

An archaeological reconnaissance survey and an ethnographic study were conducted for the park. Historic preservation and interpretation is a key guiding principle in park planning. As a wilderness park open space and view protection were critical constraints to the overall concept of the park. Resource management and long-term sustainability of this resource clearly form the heart of the design and management policies. Minimization of hazards will also be a significant factor in siting new facilities.

11.6 SPECIAL MANAGEMENT AREA RULES AND REGULATIONS OF THE COUNTY OF HAWAII

The Special Management Area (SMA) extends along Queen Ka'ahumanu Highway in the area of the project. Portions of the project are located within the SMA. The County Planning Department and County Council will review this proposed development according to the County's rules and guidelines. These guidelines are derived from Section 205A-26, HRS. The consistency of the proposed project with the guidelines are discussed below.

HRS. 9-7(A)

The council shall seek to minimize, where reasonable:

- (1) Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;
- (2) Any development which would reduce the size of any beach or other area usable for public recreation;
- (3) Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management area and the mean high tide line where there is no beach;
- (4) Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast; and
- (5) Any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.

HRS.9-7(C.)

All development in the Special Management Area shall be subject to reasonable terms and conditions set by the Council in order to ensure that:

- (1) Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles.
- (2) Adequate and properly located public recreation areas and wildlife preserves are reserved.
- (3) Provisions are made for solid and liquid waste treatment, disposition, and management which will minimize adverse effects upon special management area resources;
- (4) Alterations to existing landforms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of earthquake.
- (5) Adverse environmental or ecological impacts are minimized to the extent practicable; and
- (6) The proposed development is consistent with the objectives, goals, policies, and standards of the General Plan.

No development shall be approved unless the council has first found that:

- (1) The development will not have any substantial, adverse environmental or ecological effect except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health and safety, or compelling public interest. Such adverse effect shall include, but not be limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect and the elimination of planning options;
- (2) The development is consistent with the county general plan, development plans and zoning.

Discussion:

Adverse environmental or ecological impacts are minimized to the extent practicable. None of the planned improvements will directly affect ocean water quality, views of open water, or existing fish or

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

other wildlife habitats. Educational programs will be provided to increase awareness of the resources of the area. The improvements at the Park will expand recreational opportunities. These will be done in a manner that reflects sound conservation principles. Alterations to existing landforms will be minimal and will not adversely affect ocean water resources or scenic and recreational amenities. All new facilities and improvements will be constructed in a manner that avoids creating, either individually or cumulatively, dangers from floods, landslides, erosion, siltation or failure in the event of an earthquake.

Section 12.0

EIS - Probable Impacts and Mitigative Measures

12.0 PROBABLE IMPACTS AND MITIGATIVE MEASURES

Two types of probable effects on the environment are discussed in this section: potential short-term or construction-related effects, and potential long-term or operational-related effects. Also described are mitigative measures that are proposed for implementation, where appropriate and feasible, to minimize any adverse effects. In addition, areas where there could potentially be adverse effects, but where none are actually anticipated, are discussed.

There are some types of impacts where the potential short-term impacts of constructing a new facility, or of improving an existing facility, will be different or distinct from the potential long-term impacts that would be due to changes resulting from the existence of that new facility or improvement. In other cases, impact concerns will be related more to the permanent change that is being made, rather than to any distinction that could be made between impacts of the temporary or short-term construction process and the long-term impacts of the completed improvement. Where there could be significant differences between short-term and long-term impacts – e.g., in the case of noise impacts– separate discussions of both types of impacts are provided. Where little or no difference is anticipated, or is not considered to be significant – e.g., in the case of impacts on views -- the entire discussion is included in the sections addressing long-term impacts.

12.1 POTENTIAL SHORT-TERM IMPACTS

Construction of the facilities planned for the Kekaha Kai State Park will create some local short-term construction-related impacts on the environment. These will include temporary changes to drainage and runoff patterns, soil disturbance, dust and erosion due to clearing and grading; traffic in the project's vicinity due to construction equipment and trucks; and increased noise due to construction-related operations. There will also be some temporary disruptions to recreation use of the State Park. Short-term beneficial impacts related to construction will include employment-related expenditures and the purchase of services and materials related to the design and construction of the various projects. Local retail businesses may also indirectly benefit through direct and multiplier effects associated with construction activities. The probable short-term effects related to constructing the planned improvements and, where applicable, proposed mitigative measures are described in the following sections.

12.1.1 Topography, Soils and Drainage

The short-term impact of the proposed action on soils is limited to the small potential for erosion during construction. All grading operations will be conducted in compliance with dust and erosion control requirements of the County of Hawaii. A Grading Permit must be obtained from the County of Hawaii in order to begin construction. During Grading Permit review and approval the grading plans for the site are reviewed by the Department of Public Works and specific conditions may be attached.

The topography of the Kekaha Kai State Park will be only slightly affected by short-term construction. There will be no substantive alterations to existing drainage patterns.

Mitigative Measures – Strict erosion control measures, as required by the regulations, standards and guidelines cited below, will be followed in order to ensure that any significant adverse effects are avoided. This will include the preparation and obtaining approval of an Erosion Control Plan prior to initiating any construction. Erosion control measures will, where appropriate, include the use of cut-off ditches, temporary ground cover, and detention/sedimentation basins. Dust controls will include the frequent watering of exposed areas, good housekeeping at the job sites, and paving or landscaping of exposed areas as quickly as possible.

The following documents specify erosion and dust control measures that will be adhered to during construction of the planned improvements:

U. S. Soil Conservation Service's "Erosion and Sediment Control Guide for Hawai'i". This is more of a "how to" manual on ways to reduce erosion and sedimentation and conserve our soil resources. It is intended for use by farmers and ranchers as well as urban developers. It provides a wealth of technical information on such things as crop planting practices, soil properties related to their susceptibility to erosion, rainfall data and charts by island for estimating runoff, and types of plants to use in different erosion control situations. [This agency has been renamed the "U.S. Natural Resources Conservation Service".]

12.1.2 Surface Water Quality

No improvements are planned that will directly affect coastal waters or water quality. However, project improvements are situated near the coastline. Development of these improvements could have potential short-term impacts to surface water quality and discharge to the ocean. It is possible that there will be soil erosion and loss during construction, with transport of suspended sediment to the marine environment. The potential for impacts is minimal due to the scale of the improvements. Additionally, other than some trails all facilities are located well inland from the shoreline and are not likely to cause runoff into the ocean or adjacent ponds.

Mitigative Measures – Adherence to the erosion control measures discussed immediately above will be critical in preventing any adverse effects on coastal water quality, as well as to controlling erosion and dust. In addition to those listed above, the following regulations and guidelines will be followed in order to minimize any possible water quality effects:

- State Department of Health's "Water Quality Standards", Chapter 11-54 in the Public Health Regulations.
- Section II "Best Management Practices" in the State Department of Health's "Nonpoint Source Water Pollution Management Plan"
- U. S. Environmental Protection Agency/National Oceanic and Atmospheric Administration's "Guidance Specifying Control Measures for Sources of Nonpoint Pollution to Coastal Waters"

In addition, there are on going water quality monitoring activities along this coastal area.

12.1.3 Vegetation and Wildlife

Minor short-term effects to vegetation, wildlife and insects can be anticipated wherever site clearing and grading or excavation is necessary. Of particular concern would be any disturbance that would occur to the habitats for endangered species of vegetation or wildlife.

Mitigative Measures – The endangered loulu palm found at Mahai'ula should be preserved. Park programs also include revegetation of some areas with native and Polynesian introductions.

12.1.4 Cultural, Historic and Archaeological Resources

Significant effort was made to identify cultural, historic and archaeological resources throughout the park in order to plan intensity and location of park facilities. The general policy of the plan is to preserve these resources and where appropriate, develop educational and interpretive programs to broaden public awareness of their significance in the cultural landscape of the area. Nevertheless, increased access to the park will mean increased use and impact upon these resources.

Mitigative Measures – Management plans will be developed to ensure preservation and monitoring of the cultural, historic and archaeological resources. Section 10 of the EIS describes recommended mitigation plans.

In addition, if during the course of construction any cultural or archaeological deposits are unearthed, all work in the area will be halted and the State Historic Preservation Office and Hawaii Island Burial

Council will be notified in case of human remains. The following cultural recommendations are made as to how to respond in the event that burials are encountered during subsurface work in the project area.

The following recommendations speak to cultural concerns the Hawaiian community in general regarding proper handling of iwi, or ancestral remains, consultation with appropriate parties and final disposition of any burial should they be encountered within the project area. It is stressed that utmost sensitivity, caring and understanding be employed when dealing with burial issues and iwi.

1. In the event of an inadvertent discovery of ancestral remains, the applicable processes outlined in existing State regulations, specifically those provided in the Hawai'i Administrative Rules, Title 13, Chapter 300, Section 40 and Section 33, will be employed.
2. If, for some reason, iwi must be moved or touched, it is highly recommended that this be conducted by a cultural monitor, a lineal/cultural descendant or someone of Hawaiian ancestry.
3. Notify and consult with known and potential lineal and cultural descendants related to any burial discovery.
4. Consult with appropriate agencies and organizations including: State Department of Land and Natural Resources, Historic Preservation Division (DLNR/SHPD), SHPD Burial staff, the Hawaii Island Burial Council (OIBC), the Office of Hawaiian Affairs (OHA), Hui Mālama I Nā Kūpuna o Hawai'i Nei, and other interested Hawaiian organizations.
5. Prepare and implement a Burial Treatment Plan to be developed in consultation with the above agencies, the appropriate organizations and parties wishing to be consulted, including lineal and/or cultural descendants.

12.1.5 Air Quality

Park improvements in general are not expected to impact air quality. However, it is standard that during construction, three potential types of air pollution emissions will likely occur, resulting in short-term air quality effects:

1. Fugitive dust from soil excavation and vehicle movement;
2. Carbon monoxide and nitrogen oxide emissions from on-site construction equipment and from vehicles of construction workers and motorized construction equipment traveling to and from the worksite; and
3. Vehicular emissions resulting from traffic along Queen Ka'ahumanu Highway due to disruption of traffic flow by construction-related vehicles.

Factors favoring good air quality in the vicinity of the project site include good exposure to trade winds and ample open space. Moreover, except for vehicles traveling along Queen Ka'ahumanu Highway, there are no other sources of air pollution in the immediate vicinity.

Mitigative Measures – The short-term effects on air quality during construction will be mitigated by compliance with State Department of Health Administrative Rules, Title 11, Chapter 60. Potential control measures to reduce fugitive dust include frequent wetting down of loose soil areas with water, use of windscreens, covering of open-bodied trucks during materials transport, and the washing down of tires on construction equipment. A dust control management plan will be developed which identifies and addresses activities. If necessary, increased vehicular emissions due to disruption of peak-hour traffic by construction equipment and/or commuting construction workers can be alleviated by moving the equipment and personnel to the site during off-peak traffic hours.

12.1.6 Visual Quality

Plans intend to improve visual quality. The Visitor Center will offer a safe area to stop and visit the landscape. A hiking trail near Pu'u Kuili will also provide panoramic viewing of the Park. Construction activities will create some adverse effects on the views of the project site. Potential effects are expected to be visible from Queen Ka'ahumanu Highway, the ocean, and upslope areas. Cleared areas and stored construction equipment will be evident on-site until construction is completed.

Mitigative Measures – To minimize a variety of impacts including visual effects, work on the most visible areas along existing roadways will be completed in the shortest possible time period. Construction dust control measures will be implemented to avoid dust generation and off-site impacts.

12.1.7 Noise

Unavoidable, but temporary, noise impacts may occur during the construction period. Audible construction noise will be unavoidable during the construction of the new facilities and infrastructure at the Park.

Mitigative Measures – Construction vehicles and activities must comply with State Department of Health Administrative Rules, Title 11, Chapter 42 and Title 11, Chapter 46. The State of Hawai'i Department of Health's noise control regulation requires a permit for construction activities which emit noise in excess of 95 decibels. Mitigation measures to minimize construction noise include the use of mufflers to suppress loud equipment and limitations on the hours of heavy equipment operation.

12.1.8 Recreational Resources

Operations and recreational use of the Park will be affected in that users may be occasionally inconvenienced by construction activities. Portions of the Park may need to be shut down to accommodate road and facility improvements.

Mitigative Measures – With proper scheduling and phasing, it will be possible to minimize the inconvenience and allow continued use of the Park at substantially current levels during most of the construction period.

12.19 Employment

Planned improvements will generate short-term direct employment, both on- and off-site, during the construction period. The number of jobs at any given time will vary considerably, depending on the level of construction activity. Construction activity will also generate indirect and induced employment opportunities and multiplier effects. Those affected will be local material suppliers and retail businesses.

Mitigative Measures – The short-term employment effects will be beneficial to both the overall Hawai'i and local economies. While the magnitude of the effects on the local economy cannot be accurately projected, it should not be at a level that would generate any significant expansion or structural changes that could lead to negative effects when construction is completed. No mitigative measures are considered necessary.

12.1.10 Roadways and Traffic

Construction activities will create some short-term effects primarily from trucks, heavy equipment and other vehicles that will use existing roads - primarily Queen Ka'ahumanu Highway – to access construction areas, especially for the purpose of delivering construction materials and hauling away demolition debris. While construction vehicles are relatively slow and difficult to maneuver, it is anticipated that they will only marginally affect overall traffic flow, especially since there is little to demolish.

Commuting construction workers will slightly increase traffic levels, although their effect is anticipated to be negligible. There is sufficient space within the Park for parking all construction workers' cars and for other construction-related vehicles.

12.2 POTENTIAL LONG-TERM IMPACTS

The improved facilities at Kekaha Kai State Park will have the potential to generate some long-term effects on the natural and human environment. In addition to the subject areas discussed above with respect to short-term impacts, areas where long-term impacts are possible include improved recreational access, visual resources, roads and preservation of cultural resources. Probable long-term impacts related to completion and operation of the planned improvements and, where applicable, proposed mitigative measures are described in the following sub-sections.

12.2.1 Climate

The proposed project will not have an affect on climatic conditions and no mitigative measures are required.

12.2.2 Topography, Soils and Drainage

Proposed improvements at Kekaha Kai State Park are not expected to alter drainage patterns significantly.

Mitigative Measures – Overall, there will be no major change in existing drainage conditions at the Park. Runoff from parking lots and paved areas will be directed to grassland areas.

12.2.3 Flood and Tsunami Inundation Hazards

Portions of Kekaha Kai State Park are located along the shoreline, subjecting park areas to tsunami inundation hazards.

Mitigative Measures – Potential mitigative measures include complying with recommended building design standards that will help to maintain the structural integrity during the course of a hurricane. Additionally, new facilities will be sited outside inundation zones to the maximum extent practicable.

12.2.4 Surface and Ground Water Quality

No improvements are planned that will directly affect surface, ground and coastal waters. Increase access to the shoreline will result in greater enjoyment of the coastal area, such as fishing, surfing and snorkeling. Increase use will also mean increase impact on the shoreline resources including impacts on the coral, fish and marine life.

There is an ongoing water quality monitoring program for this area that will keep tract of the impacts of land activities generate on the shoreline water quality. Consideration of establishing a marine fisheries management area to protect marine resources was discussed amongst community task force members.

12.2.5 Vegetation and Wildlife

Section 6 describes general developmental guidelines for Kekaha Kai State Park, including policies regarding landscaping. These include a preference for endemic, indigenous and Polynesian introductions; a focus on xeriscape; eradication of Alien Species; and landscaping which enhances recreational value. Large green lawns are not planned. Vegetation and wildlife inventory studies were conducted for the park. Reports are included in the Appendices. Recommendations for the protection of endangered species are echoed in the studies.

12.2.6 Cultural, Historic and Archaeological Resources

The improvements planned for Kekaha Kai State Park will have both negative as well as beneficial impacts on the cultural, historic and archaeological resources. Increased human access to these resources could pose a negative impact if used improperly and disrespectfully.

Mitigative Measures – Signage, educational programs and interpretive programs are planned to increase awareness of the cultural, historic and archaeological resources throughout the park and of the Kekaha region. Section 3 describes some of the educational resource themes targeted for the park.

The park policy is to protect and preserve these resources. All physical improvements will be sited in areas that minimize impacts to existing cultural, historic and archaeological resources in the park. Specific information has been gathered regarding existing cultural, historic and archaeological resources. Section 10 highlights the findings and recommendations of these studies. Full copies are available in the Appendices.

Through the dissemination of this EIS and future EIS reports, education of the rich resources at Kekaha are already beginning.

Increased staff, docent and volunteer presence will add a protective presence that is currently unavailable.

12.2.7 Air Quality

A slight increase in vehicular traffic and emissions is expected, but the effect on air quality will be minor. None of the new facilities will affect the air quality.

Mitigative Measures – Overall the air quality at Kekaha Kai State Park is very good due to the low intensity of use, the expanse of open space and the trade winds that blow most of the time. The planned improvements will not change these conditions. No mitigative measures beyond existing vehicle emission controls are considered necessary. Air Quality impacts caused by the neighboring activities of the Kona International Airport will remain.

12.2.8 Noise

Noise levels generated from park usage is expected to be minimum since park usage is geared toward preservation and passive recreational uses. Noise generated from activities adjacent to the park will continue to be part of the park experience. This includes noise from the airplanes traveling to and from the Kona International Airport and noise from the ocean.

Mitigative Measures – A buffer zone between the Park and the adjacent Manini'ōwali Development has been designed which should minimize noise impacts to and from the park.

12.2.9 Visual Resources

The planned improvements are intended to increase visual appreciation for the scenic resources of Kekaha Kai. Vehicular pullouts are planned at Mahai'ula for park users to stop and enjoy the beauty of the region. The view of Pu'u Kuili will be enhanced by the restriction of vehicular access to the summit. Pedestrian trails to the summit will provide rim views of the park coastal areas as well as views of Hualālai. No high rises are planned in the park. All facility improvements are one story and will be designed appropriately to the surrounding environment.

12.2.10 Roadways and Traffic

Improved access into Mahai'ula and Manini'ōwali from Queen Ka'ahumanu Highway will lead to increased use of the resources at Kekaha Kai State Park. Additional vehicles will be able to drive directly and more comfortably down to the shoreline. The provision of a paved roadway system to Kua Bay will presumably increase public use of the shoreline area and camping opportunities. Entrance improvements

at Mahai'ula will provide more space for free flowing traffic in both directions along Queen Ka'ahumanu Highway. Road improvements at Mahai'ula will lead to increased use of the resources by the public, including increased access to community members, including kūpuna, schoolchildren and educational programs, as well as by tourist.

Mitigative Measures – Egress and ingress traffic impacts along Queen Ka'ahumanu Highway will be minimized by planned intersection improvements at both the Veteran's Cemetery (Manini'ōwali access) and the Mahai'ula entrance. At Manini'ōwali, the existing painted median on Queen Ka'ahumanu Highway is proposed to be widened to 30 feet. Included in this median would be left-turn lanes in directions, a 6-foot separator, and median refuge areas for vehicles turning left out of the West Hawaii Veterans Cemetery. Intersection control would be STOP-sign control on the West Hawaii Veterans Cemetery and makai leg approaches (Figure 12 – 1). Further details are provided in the traffic report in Appendix G. The Manini'ōwali entrance from Queen Ka'ahumanu Highway will also serve as an entrance to the Manini'ōwali Development. Funding for this improvement will be provided by the developer. In addition, a traffic-monitoring plan is proposed that would review traffic conditions at this intersection after half of the Manini'ōwali Development has been implemented. If the monitoring indicates the need for a traffic signal system, the developer will install it at no cost to the State of Hawaii.

Additional improvements to the entrance to Mahai'ula are proposed for consideration. This includes expanding pavement widths and shoulders. Such improvements would provide more space for free flowing traffic in both directions.

Access to the shoreline will be monitored by the use of gates and administrative controls such as operating hours. The provision of educational programs, signage and interpretive programs are intended to lead to better awareness of proper use and respect for the resources throughout the park. In addition, location of the roadways and the parking areas are sited in areas that do not impact cultural features. Designated parking areas are provided to deter vehicles from driving and parking directly on resources areas such as the shoreline.

12.2.11 Public Safety

The relative isolation of the park site due to its distance from population centers, as well as potential safety hazards inherent in the rugged terrain, raises concerns for public safety if greater access to the area is provided. The presence of more people will probably increase demands on services such as emergency medical, police, ocean rescue and fire protection services. A fire protection plan (an important emergency safety precaution for the park), will be prepared. Comments from the Fire, Police and Civil Defense Department have not been received.

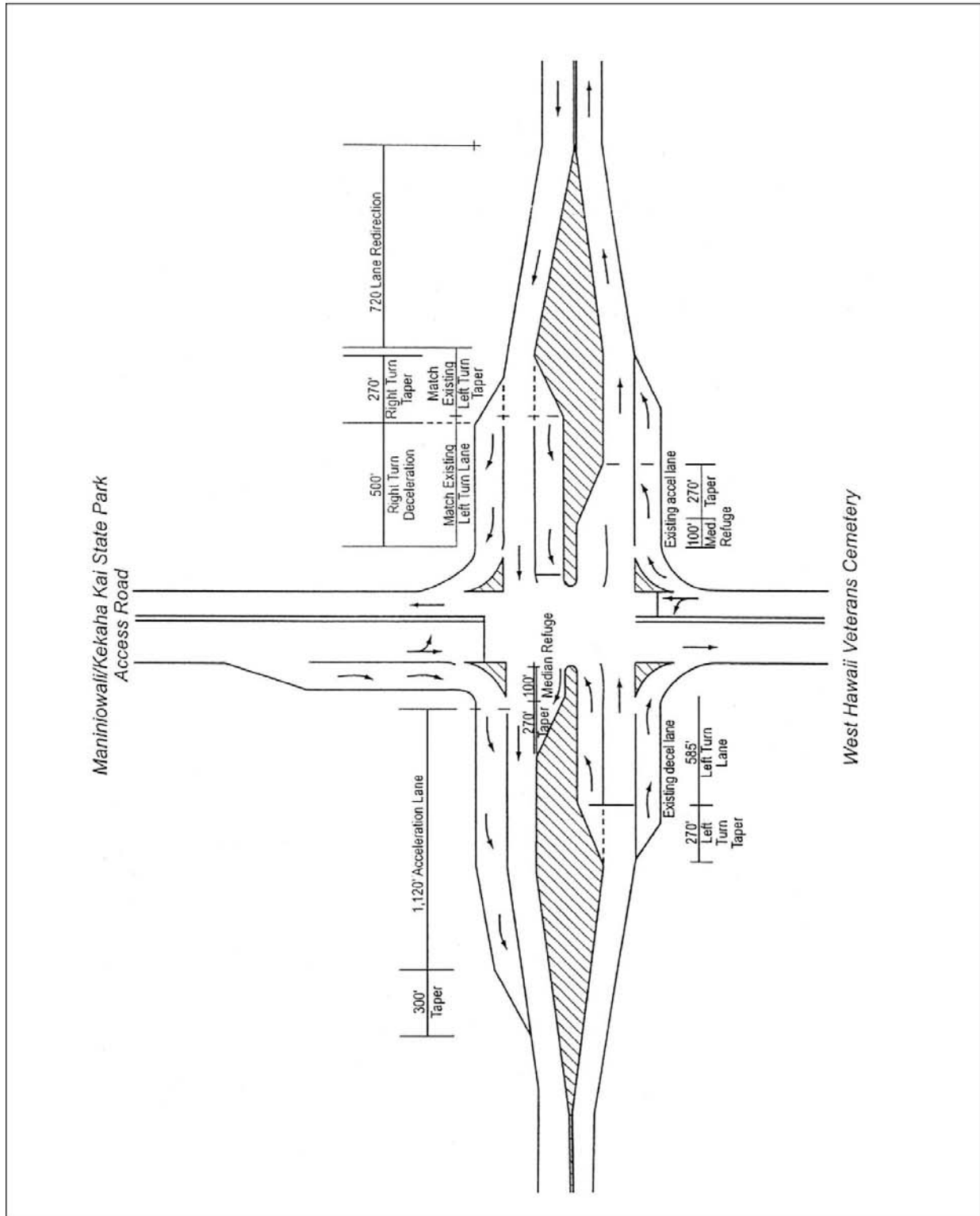
12.2.12 Recreational Resources

The planned improvements at the Kekaha Kai State Park will greatly expand access to recreational resources along the shore. The effect of these planned improvements on recreational resources will be beneficial. This is primarily because these facilities were requested by the community and will improve recreational resources.

Mitigative Measures – The primary purpose of the planned improvements at Kekaha Kai State Park is to increase the recreational opportunities and facilities in the area. As such, there should be no adverse effects on recreational resources that require mitigation.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •



Kekaha Kai State Park

Proposed Intersection Configuration

Figure 12 - 1

12.2.13 Population and Employment

The planned improvements are not expected to generate any population effects. The increase will definitely not be at a level that could cause any shift in resident population growth from other areas of Hawai'i to the Kona region, much less have any effect on Hawai'i's overall population growth rate. New jobs may be created as the Park as facilities are developed. For example, additional caretakers may be hired along with the interpretive technician.

Mitigative Measures – Employment effects will be small, but beneficial. No other mitigative measures are considered necessary.

12.2.14 Utilities

As described in the Development Plan, general improvements for connection to local public water, wastewater, electrical and telephone systems will be minimal. Utility resources will be provided on site. Water lines will be installed at the Kūki'o development near the Manini'ōwali / Kūki'o section of the park. A sewage system will be developed as part of the Kūki'o development adjacent to Manini'ōwali / Kūki'o park.

12.3 SUMMARY OF PROBABLE IMPACTS

12.3.1 Interrelationships and Cumulative Environmental Impacts

Cumulative and interrelated impacts are those associated with existing, approved and foreseeable future projects that may produce related or additive impacts.

The project site lies within the North Kona Judicial District, one of nine judicial districts in Hawaii County. The North Kona District lies on the western coast of the island of Hawaii within the larger region known as West Hawaii. Anaeho'omalu Bay marks the district's northern boundary and Kealakekua Bay marks its southern boundary. The inland boundaries are defined by the land masses of Mauna Loa and Hualālai. The North Kona Judicial District includes Census Tracts 215 (Kailua-Kona) and 216 (the remainder).

The primary commercial center of the region is located at Kailua-Kona, the third largest town on the island of Hawaii, with a 2000 population of 17,288 (U.S. Census Bureau, 2000). Secondary urban centers are found in the communities of Hōlualoa, Kainaliu, Keauhou and Kalaoa.

Development over the past two decades and anticipated future development are shaping the Kailua-Kona region into a major urban growth area for the Island of Hawai'i. Fueled by tourism, development in the Kona area includes light industrial facilities, residential areas, resorts, commercial and governmental centers, and educational facilities.

The service area of Kekaha Kai State Park includes the visitors and residents of West Hawai'i from Kawaihae south to Kailua-Kona and Keauhou. Within this region, the urban areas around Waikoloa and Kailua-Kona are growing very rapidly. This growth is reflected in the County of Hawai'i's General Plan which shows several thousands of acres designated as urban expansion areas around these existing communities. The expansion area north of Kailua-Kona covers the area mauka of Keāhole Airport and Honokōhau and includes the Kealakehe area. Kealakehe is the nearest planned, residential community to Kekaha Kai State Park. Its northern boundary is about one and a half miles from the proposed southern edge of the park. The Waikoloa urban expansion area includes the existing communities of Puakō and Waikoloa. The southern edge of this urban expansion area is about twenty miles from the project site.

The project site sits adjacent to a smaller urban resort/residential node that includes parts of Manini'ōwali, Kūki'o 2 and Ka'ūpūlehu. Existing developed area of this urban node is the Kona Village Resort in Ka'ūpūlehu and the other resort development, the Four Seasons at Ka'ūpūlehu.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

W. B. Kūki'o Project is currently being developed. These developments will create greater demand for outdoor recreational resources in the region. The development of the Manini'ōwali project will have a direct impact on the development of Kekaha Kai State Park in that, according to present agreements, the access roads, parking and some of the facilities for Kua Bay will be provided by the landowner.

Other development proposals in the vicinity of the Kekaha Kai State Park, including residential, commercial, industrial and public sector, that may produce related or additive effects include:

- The Department of Hawaiian Home Lands Plans at Kealahou involves developing 400 homes on 200 acres, commercial development on 3.7 acres and industrial development on 29.2 acres.
- TSA International Ltd. Plans a 102-acre expansion of the Kaloko Industrial Park which involves a rezoning from conservation to urban district. Plans involve adding 82 improved industrial and commercial lots.
- Laniihou Properties LLC plans to construct a 337-acre Kaloko-Honokōhau Business Park for industrial and commercial use mauka of Honokōhau Harbor. Plans involve expanding quarrying and quarry-related activities.
- Queen Lili'uokalani Trust plans to urbanize nearly 315 acres of its property in the area. In 2000, the trust started with a 50-acre parcel that now houses Kmart, Macy's and Wallace Theatres. Later, it undertook development of a 101-parcel, which includes about 40 acres for commercial use, 29 acres for industrial and 21 acres for outdoor commercial activities.
- Honokōhau Properties, the company plans to build 70 single-family homes and develop 45 acres for commercial use.
- The County of Hawaii is pursuing development of a 200-acre golf course at Kealahou, where, in the early 1990s, a Japanese developer was awarded the contract to build the course.
- Natural Energy Laboratory of Hawaii (NELH). A gateway project to add alternative energy and marine biology research facilities is in the works.
- University of Hawaii plans to build a 30-acre footprint for the first phase of UH expansion in West Hawaii that could accommodate 1,500 students. Plans call for a 500-acre campus.
- Department of Transportation (DOT) Airports Division will work on expanding Kona International Airport. DOT will also undertake future road construction as part of a county transportation corridor plan.

The Kekaha Kai State Park will provide open space and recreational opportunities for these proposed developments.

12.3.2 Potential Secondary Effects

Kekaha Kai State Park will function synergistically with other parks and outdoor recreational resources in the area. There is a shortage of sandy beaches and coastal recreational facilities in the area and this park is an important link in the string of recreational facilities along the coast. Improvements at Kekaha Kai State Park will add to the regional recreational resources along the coast. Three other parks which have influenced and will be influenced by Kekaha Kai State Park include the following.

Kaloko - Honokōhau National Historic Park

Kaloko-Honokōhau is a National Historical Park managed by the National Park Service. Authorized in 1978 by Public Law 95-625 "to provide a center for the interpretation and perpetuation of traditional native Hawaiian activities, and culture, and to demonstrate historic land use patterns as well as provide needed resources for the education, enjoyment, and appreciation of such traditional native Hawaiian

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

activities and culture by local residents and visitors.” The park area includes two fishponds (‘Aimakapā and Kaloko), and several agricultural, religious and habitation structures. Park plans call for restoration and recreation of native Hawaiian facilities (including a native Hawaiian village), cultural practices and land use patterns for education and enjoyment. Currently there are two major access routes to the park via four-wheel-drive roadways. There is an information kiosk at Kaloko Pond and compost toilet comfort stations at both pond areas. The ponds also serve as wildlife preserves for endangered native water birds such as the coot and stilt. Some tagging of native vegetation has also been completed.

Kaloko-Honokōhau NHP is about three and a half miles south of Kekaha Kai State Park. Located north of Honokōhau Harbor, south of Keāhole Airport, and makai of Kaloko Industrial Park, the park is close to urban areas and convenient for educational and recreational purposes. Due to its size and the quality of its resources the park is a significant recreational, educational and environmental resource for the community.

Proposed park facilities include an orientation center where basic information and artifacts would be presented (National Park Service, 1994). The center would also include a library, research laboratory, and museum, as well as administrative and support areas. A live-in cultural education complex would combine working, meeting, educational, living, and ceremonial areas. This complex would be secluded from daily park visitors, providing an opportunity for individuals to recreate the traditional environment of the area. Areas outside the live-in complex would be set aside for traditional activities such as tending fishponds, subsistence shoreline fishing, and subsistence horticulture.

The Kaloko-Honokōhau National Historical Park, as it develops in the coming years, will provide West Hawai‘i with sophisticated interpretive/education programs and a treasured cultural resource. Park development of Kekaha Kai State Park should complement rather than duplicate facilities at Kaloko-Honokōhau National Historical Park.

Kīholo Bay

The proposed Kīholo Bay State Park Reserve (PR) and surrounding land is a large State-owned property, with several private shoreline residence inholdings. At present it is undeveloped with vehicular access possible through unimproved non-exclusive easement roadways. The area is predominantly made up of lava lands which have been impacted by the extensive Ka‘ūpūlehu flow of 1859. A large grove of coconut palms cover the area spared by the 1859 flow. Some people feel that the existing sand bar in Kīholo Bay is the remnant of Kamehameha’s great fishpond which was destroyed in the 1859 flow. The Kīholo area is also the site of the famous freshwater pond, Luahinewai, mentioned in many tales of the region.

Located about four miles north of Kekaha Kai State Park, Kīholo Bay is being considered for future development as a State park and would be the major public park along the Ala Kahakai between the Hāpuna Beach State Recreation Area and Kekaha Kai State Park.

Ala Kahakai

The Ala Kahakai is another important element in the planning of Kekaha Kai State Park. According to a memo by the U.S. Department of the Interior, “the Ala Kahakai is a new trail, a concept which links old fisherman's trails into a continuous trail. It is a series of historic trails linked by recreational trails to make a continuous shoreline trail. It includes the ocean and the lands beside the trail. It is a living path which connects people and places and changes over time”. The 35-mile segment from Kawaihae to Kailua-Kona is the first increment of the Ala Kahakai planned for development and registration of the Ala Kahakai as part of the National Trail System. In January, 1998, Final Environmental Impact Statement, the NPS recommended this become a National Historical Trail. The trail was designated as a National Historic Trail. The historic portions of the Ala Kahakai have been identified within the park through archaeological research.

Future development will connect all the historic sections into a continuous network with the Ala Kahakai serving as the spine of this trail system. The Ala Kahakai will also connect the island's coastal parks allowing hikers to walk between parks with camping facilities and comfort stations. Hikers will be able to walk on this trail from Spencer Beach Park and Hāpuna SRA in the north to Kekaha Kai State Park and south to Kailua-Kona.

12.3.3 Relationship Between Local Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity

These relationships are described below in the context of the following four specific areas of potential concern:

- Narrowing of the range of beneficial uses of the environment;
- Long-term risks to health and safety;
- Foreclosure of future options; and
- Trade-offs among short-term and long-term gains and losses.

The planned improvements are considered to be beneficial uses of the environment. They utilize areas that have been previously disturbed for several beneficial purposes, including:

- Adding and improving recreational facilities in the area; and
- Preservation of cultural resources.

The improvements will improve the overall human use of the natural resources throughout the Park. No long-term risks to health and safety are anticipated from the proposed improvements to the Park.

The only potential substantive "trade-off among short-term and long-term gains and losses" that is apparent would be the commitment of funds to complete these improvements in the near-term. The other option would be waiting to make these improvements in the future, or simply leaving this potential "funding source" for use on another project at some time in the future.

12.3.4 Irreversible and Irretrievable Commitments of Resources

The construction and operation of the planned new improvements and facilities will involve the irretrievable commitment of certain natural and fiscal resources. There will be a permanent commitment of funds and resources to plan, design, construct and operate the new improvements and facilities. Planning, design and construction of the planned improvements will require the expenditure of approximately \$6.7 million dollars. Construction will also involve the use of labor and materials, most of which is non-renewable and irretrievable.

12.3.5 Adverse Environmental Effects That Cannot Be Avoided

Adverse impacts can be divided into short- and long-term effects. Short-term effects are generally associated with construction, and prevail only for the duration of the construction period. Long-term effects generally follow completion of the improvements, relate either simply to their existence or to the operation of the new facilities, and are permanent. Effects that can be considered both adverse and unavoidable are as follows:

12.3.6 Unavoidable Adverse Short-term Effects

- Soils will be temporarily disturbed by grading, excavation and mounding activities at the project sites during construction.

- Temporary increases in soil erosion will also result from construction operations, and minor amounts of soil may be carried beyond construction sites, in surface runoff water.
- A small amount of natural vegetation will be removed to allow construction of the planned improvements.
- Wildlife utilizing the project sites and immediate adjacent areas will be displaced, most likely into nearby undeveloped lands, by construction activities.
- Operation of construction equipment, trucks and worker vehicles may temporarily impede traffic in the areas during the construction period.
- Negligible releases of air contaminants will occur from construction equipment emissions. Small amounts of dust may be generated during dry periods as a result of construction operations.
- Minor increases in noise levels may result from construction activities.

12.37 Unavoidable Adverse Long-term Effects

- Increased use of the resources at the park.
- The added emissions from an increase in traffic to the area will have a negligible effect on air quality in the area.

Section 13.0

EIS - Alternatives to the Proposed Actions

13.0 ALTERNATIVES TO THE PROPOSED PROJECT

Alternative schemes evaluated include three levels of intensity of development along with a no-action alternative.

13.1 NO-ACTION ALTERNATIVE

The “no-action” alternative would involve no changes to the existing park. Unpaved roads would remain unimproved. Existing facilities which include portable toilets, picnic tables and trash cans would not be improved or expanded. Access to the park would continue to be controlled by a gate near Queen Ka’ahumanu Highway and limited to daytime use. No additional management practices would be initiated at the park. This alternative was reviewed and rejected early in the planning process because it would not protect the resources nor provide increased access to recreational resources.

13.2 HIGH, MEDIUM AND LOW INTENSITY ALTERNATIVES

Three concept plans were developed, which reflect High, Moderate and Low intensity uses for the development of the park resources within each of the *ahupua’a*. The alternatives addressed the following park development activities: Parking, Support Facilities, Vehicular Roadways, Camping, Landscape, Interpretive Areas, and Pedestrian Paths.

Evaluations of existing natural/cultural resources as well as interpretations of the historic land use and settlement patterns of the Hawaiians who inhabited the region in the past were considered in the development of alternative development plans. As a general methodology, a series of resource/constraint maps were developed to guide park planning. These included natural geological features such as Pu’u Kuili, Kapo’ikai, sandy shorelines, and existing vegetation, and man-made constraints such as airport noise. Finally, known wetland, archaeological and historic areas were mapped by degrees of concentration and significance. Shoreline and topographical considerations were also assessed.

The detail of each scenario is described in Appendix B of the Kekaha Kai State Park Conceptual Plan.

13.2.1 High Intensity Use

The high intensity use is distinguished by the degree of vehicular access into the park. Within this scenario, car to activity areas and parking intensities are indicated at the high end of the expected capacities for beach areas, trailheads and other activities. Additionally, the capacity of facilities reflects a relatively high level of use.

	Mahai’ula	Awake’e	Manini’ōwali
Parking stalls	300	75	120
Paved Road	Continuous	None	Yes
Comfort Station	3	1	1
Picnic Areas	Improved	Unimproved	Improved

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

13.2.2 Medium Intensity Use

Medium intensity alternative reflects a reduction in overall facilities and a middle ground in the opposing pressures for access and protection of the resources. Parking counts are less, access is partially limited and facility plans are scaled back in comparison to the high intensity schemes.

	Mahai'ula	Awake'e	Manini'owali
Parking stalls	130	40	100
Paved Road	Partly	None	Yes
Comfort Station	2	0	1
Picnic Areas	Limited areas	Unimproved	Improved

13.2.3 Low Intensity Use

The low intensity alternative generally takes existing conditions and adds maintenance. There are only limited facility additions. Maintenance would be on an as needed basis.

	Mahai'ula	Awake'e	Manini'owali
Parking stalls	95	25	50
Paved Road	None	None	Yes
Comfort Station	2	0	1
Picnic Areas	Unimproved	Unimproved	Limited areas

The alternatives were developed in three levels of intensity with the understanding that any option could be chosen in each planning area, and that specific features or elements could be added or withdrawn from each section. With this framework, the alternatives were presented to the Kona Community in a public meeting on April 25, 1995 at Kealakehe Intermediate School. After several public meetings and discussions with various groups a low intensity, incremental development approach was recommended.

Section 14.0

EIS - Summary of Unresolved Issues

14.0 SUMMARY OF UNRESOLVED ISSUES

Several unresolved issues are discussed below that are related to the planning and development of Kekaha Kai State Park. The discussion focuses on the lack of a need to resolve them prior to completion of the planned improvements, and/or the overriding reasons for proceeding without resolving the issues.

14.1 PUBLIC TRAILS ON PRIVATE LANDS

Discussions have been held regarding future use of the mauka makai historic trail located in the *ahupua'a* of Makalawena. The Kamehameha Schools holds title to the portion of the *ahupua'a* of Makalawena in which the trail is situated. The State Attorney General's office has opined that historic trails are public property. The extent to which the trail will be part of the Kekaha Kai State Park will remain an unresolved issue and open for further discussions with the landowner. However, there is no need to resolve this issue before proceeding with the planned improvements discussed in this EIS.

14.2 DEGREE OF ROAD IMPROVEMENT TO MAHAI'ULA

Differences of opinion about the level of improvement to the road leading down to Mahai'ula continues to exist among members of the Kekaha Kai Task Force. While the plan is not to pave the road for the foreseeable future, potholes and future deterioration of the roadway may keep the issue of improvement a continuing public concern.

14.3 FUNDING RESOURCES

Management of the park will depend heavily on the availability of financial resources. It is not clear at this time whether the State has sufficient funds to implement the planned improvements and necessary management tools. W.B. Kūki'o funding is more certain – so development of the Manini'ōwali/Kūki'o section would be likely.

14.4 FUNDING RESOURCES

While there will be no regular commercial uses in the Park, the definition of commercial use and the types of commercial operation are very diverse. Also other state priorities and shortages of funds to maintain the park generate pressures to review other potential uses that may have a commercial element. This issue will require further discussion and more detailed policies need to be developed.

14.5 POTENTIAL IMPACTS TO CULTURAL RESOURCES ON PRIVATE LANDS (PUU ALI'I DUNES AND KOLOMIKIMIKI)

Development of the park will increase activity and traffic to sensitive areas in private parcels. Further discussion with Kamehameha Schools is needed to protect the Pu'u Ali'i Dune in Makalawena. Inadvertent visits to Kolomikimiki will occur and discussions with the Catholic Church are needed to proactively protect this site.

Section 15.0

EIS - Required Approvals and Permits

15.0 REQUIRED APPROVALS AND PERMITS

The proposed improvements are intended to be consistent with and support the intent of the State Conservation District, the County's General Plan, Community Plans, and provisions of the Special Management Area. The following is an approximate list of major approvals and permits and their status required for implementation of the planned improvements. Ministerial permits will be obtained such as building, grading, etc.

**TABLE 15-1: REQUIRED APPROVALS AND PERMITS
KEKAHA KAI STATE PARK**

Approval or Permit	Approving Authority	Status
Conceptual Plan Approved	Board of Land and Natural Resources	Approved
Environmental Impact Statement Acceptance	State of Hawaii, Governor	In Preparation
Special Management Area Use Permit	HRS Chpt. 205, County Planning Commission	In Preparation
Conservation District Use Permit	Board of Land & Natural Resources	In Preparation
Grading and Building Permits	Hawaii County, Planning Department	Future

Section 16.0

EIS - References

16.0 REFERENCES

- Bay Pacific Consulting, Trail Planning and Management in Hawaii: A Conceptual View Office of State Planning, Honolulu, Hawai'i, June 1996.
- Belt Collins & Associates, Kaupulehu Resort, Kaupulehu, North Kona, Hawaii, Final Environmental Impact Statement Kaupulehu Development, Honolulu, Hawai'i, June 1986.
- Bishop Museum, Public Archaeology Section, Archaeological Inventory Survey of the Land Exchange Parcel in Maniniowali/Kukio 2 Ahupua'a, North Kona District, Hawaii Island North Kona Development Corporation, Honolulu, Hawai'i, December 1992.
- Brock, Richard. PhD., Second Quarterly Baseline Period. Water Quality Monitoring Report in Support of the Development at Maniniowali, North Kona – December 2001. Environmental Assessment Co., Honolulu, Hawaii. EAC Report No. 2002-11A. Prepared for WB Kukio Resorts, LLC. April 2002.
- Char, Winona, Botanical (Flora) Studies, Kona Coast State Park, North Kona, Island of Hawai'i June 1995.
- Clark, John R. K., Beaches of the Big Island University of Hawai'i Press, Honolulu, Hawai'i, 1985.
- County of Hawai'i, The General Plan November 1989.
- De Chiara, Joseph, Urban Planning and Design Criteria 1982.
- Department of Land and Natural Resources, State Recreation Function Plan, Technical Reference Document and State Comprehensive Outdoor Recreation Plan (SCORP) Honolulu, Hawai'i, December 1990.
- Division of Forestry and Wildlife, Na Ala Hele, Hawaii Trail & Access System State of Hawai'i, DLNR, Honolulu, Hawai'i, May 1991.
- Engineering Concepts, Inc. Existing infrastructure summary information transmitted to Group 70. 1995.
- Fogg, George E., Park Planning Guidelines, Revised National Society for Park Resources, 1992.
- General Services Administration, Department of Defense, Department of Housing and Urban Development, U.S. Postal Service, Uniform Federal Accessibility Standards: FED-STD-795 United States of America, Washington D.C., April 1988.
- Group 70 International Inc., Environmental Assessment for Awake'e/Maniniowali Land Exchange North Kona Development Honolulu, Hawai'i, October 1990.

KEKAHA KAI STATE PARK

- Draft Environmental Impact Statement •

Group 70 International Inc., Kona Coast State Park Conceptual Plan Department of Land and Natural Resources, Division of State Parks Honolulu, Hawai'i, 1996.

Group 70 International Inc., Kona Coast State Park Environmental Impact Statement Notice of Preparation Department of Land and Natural Resources, Division of State Parks Honolulu, Hawai'i, 1996.

Hawaii Design Associates, Kaena Point State Park Conceptual Plan State of Hawai'i, DLNR, Division of State Parks Honolulu, Hawai'i, April 1978.

Helber, Hastert, Van Horn & Kimura, Awake'e Resort, North Kona, Hawaii, Draft Environmental Impact Statement Kahala Capital Corporation, North Kona, Hawai'i, December 1986.

Helber, Hastert, Van Horn, & Kimura, Planners for Kahala Capital Corporation, Awakee Resort, North Kona, Hawai'i: Draft Environmental Impact Statement December 1986.

Jubenville, Alan, Outdoor Recreation Management W.B Saunders Company, Philadelphia, PA, 1978.

Kelly, Marion, Kekaha: 'Aina Malo'o - Historical Survey and Background of Kaloko and Kuki'o Ahupua'a, North Kona, Hawai'i Department of Anthropology, Bernice P. Bishop Museum, Honolulu, Hawai'i, March 1971.

Maly, Kepa, "Kekaha Wai Ole o Wa Kona": A Report on Archival and Historical Documentary Research, and Oral History Interviews for Kekaha Kai State Park. Kuma Pono Associates, Hilo, Hawai'i, 1998.

Maquire, Eliza D., Kona Legends The Petroglyph Press Ltd, Hilo, Hawai'i, 1966.

Mogi Planning & Research Inc., Makena La Perouse State Park State of Hawai'i, DLNR, Division of State Parks, Honolulu, Hawai'i, May 1977.

National Park Service, Ala Kahakai, National Trail Study and Environmental Impact Statement Internal Review Draft, Department of the Interior, San Francisco, CA, March 1997.

National Park Service, General Management Plan/Environmental Impact Statement, Kaloko - Honokohau National Historical Park, Hawaii United States Department of the Interior, Kaloko, Hawai'i, July 1994.

North Kona Development Group. Environmental Assessment for Awake'e/Manini'owali Land Exchange: A Land Exchange Involving State Lands October 1990.

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

North Kona Development Group, Manini'owali Residential Community, North Kona District, Island of Hawai'i Final Environmental Impact Statement February 1992.

Oceanit Laboratories, Inc., Groundwater Impact Assessment for Maniniowali, Hawaii Group 70 International Inc. Honolulu, Hawai'i, September 1991.

Ohashi, Tim, Survey of Wildlife Resources, Kona Coast State Park, North Kona, Island of Hawai'i - Draft Report January 1995.

Pacific Planning and Engineering, Inc., Traffic Impact Assessment Report for Kona Coast State Park. December 1996. Draft

Parsons Brinckerhoff Quade & Douglas, Inc. Traffic Impact Analysis. Maniniowali Development, Kona, Hawaii. Prepared for W.B. Maniniowali, LLC. PBQD Reference Number: 16364A.02. March 2002.

Pantaleo, Jeffrey, MA, Stephan D. Clark, BS, Coral Rasmussen, and Bobby Camara with contributions by Hannah Kihalani Springer for North Kona Development Corporation, Archaeological Inventory Survey of the Land Exchange Parcel in Manini'owali/Kukio 2 Ahupua'a North Kona District, Hawai'i Island Public Archaeology Section, Applied Research Group, Bishop Museum: Honolulu, Hawai'i, December 1992.

Pantaleo, Jeffrey, MA. Meeting with Francis Oda, George Atta, Deborah Swanson, and Christine Ruotola at Group 70 International, Inc regarding the history and archeology of the Kona Coast State Park. February 13, 1995.

PBR Hawaii, Kikaua Point Park Huehue Ranch Associates, L.P. Waikoloa, Hawai'i, February 1992.

Phillips Brandt Reddick & Assoc. (Hawaii) Inc., Makalawena Resort, Final Environmental Impact Statement Kamehameha Schools/Bernice Pauahi Bishop Estate, Honolulu, Hawai'i, December 1986.

Rutka, Susan S., Ala Kahakai, Alternatives for Administering a Coastal Trail System University of Hawai'i Sea Grant Program, Honolulu, Hawai'i, July 1973.

Sharpe, Grant W.; Charles H. Odegaard, Wenonah F. Sharpe, Park Management John Wiley & Sons, New York, 1983.

Sinoto, Aki, Archaeological Survey of Mahai'ula (unpublished draft). 1996.

Soehren, Lloyd J. , Archaeology and History in Kaupulehu and Makalawena, Kona, Hawaii. Prepared for the Bernice Pauahi Bishop Estate by the Bernice P. Bishop Museum,, Honolulu, Hawaii, April, 1963.

Springer, Hannah Kihalani, Regional Notes From Kekaha: Manini'owali/Kukio 2. 1989. in Archaeological Inventory Survey of the Land Exchange Parcel in

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

Manini'owali/Kukio 2 Ahupua'a North Kona District, Hawai'i Island December 1992.

State of Hawai'i, Department of Business and Economic Development, The State of Hawai'i Data Book 1992.

State of Hawai'i, Department of Land and Natural Resources, Division of Aquatic Resources. Memorandum to Sherrie Samuels, Division of State Parks re Marine Survey of Kona Coast State Park. 29 January 1996.

State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife, Na Ala Hele Hawai'i Trail & Access System: Program Plan May 1991.

State of Hawai'i, Department of Land and Natural Resources, Division of State Parks, Archaeological Reconnaissance Survey Kekaha Kai State Park, Mahai'ula Section Kaulana and Mahai'ula Ahupua'a, North Kona, Island of Hawai'i Honolulu, HI 1998.

State of Hawai'i, Department of Land and Natural Resources, State Recreation Functional Plan: Technical Reference Document December 1990.

State of Hawai'i, Department of Land and Natural Resources, State Comprehensive Outdoor Recreation Plan December 1996.

State of Hawai'i, Architectural Access Committee, Outdoor Recreation Design Guidelines Honolulu, Hawai'i, January 1994.

U.S. Architectural & Transportation Barriers Compliance Board, Americans with Disabilities Act (ADA): Accessibility Guidelines for Buildings and Facilities Washington D.C., July 26, 1991.

U.S. Department of the Interior, Guiding Principles of Sustainable Design Denver Service Center, Denver Colorado, September 1993.

United States Department of Agriculture, Soil Conservation Service, Soil Survey of Island of Hawai'i, State of Hawai'i Prepared in cooperation with the University of Hawai'i Agricultural Experiment Station.

United States Department of the Interior, National Park Service, Ala Kahakai National Trail Study and Final Environmental Impact Statement.

United States Department of the Interior, National Park Service, General Management Plan/Environmental Impact Statement: Kaloko-Honokohau National Historical Park Hawai'i July 1994.

United States Department of the Interior, National Park Service, Summary of Scoping for the National Trail Study for the Ala Kahakai 1994.

KEKAHA KAI STATE PARK

- Draft Environmental Impact Statement •

United States Department of the Interior, National Park Service, Final Environmental Impact Statement for the National Trail Study for the Ala Kahakai, Hawaii County, Hawaii, Record of Decision. 1998.

Wilson Okamoto and Associates, Inc. for Department of Land and Natural Resources, Division of State Parks, Draft Ka Iwi Master Plan August 1992.

Wilson Okamoto and Associates, Ka Iwi State Park Master Plan and Final Environmental Impact Statement State of Hawai'i, DLNR, Division of State Parks Honolulu, Hawai'i, April 1996.

Section 17.0

EIS - Agencies And Parties Consulted

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

17.0 AGENCIES AND PARTIES CONSULTED

The following agencies, organizations and individuals were contacted during the preparation of the Environmental Impact Statement Notice of Preparation (EISNP), and the Draft Environmental Impact Statement (DEIS) for the proposed Kekaha Kai State Park project.

Respondents and Distribution	Received EISNP	Comments Received	Received DEIS
A. Federal Agencies			
U.S. Army Corps of Engineers – Pacific Ocean Division	x		x
U.S. Department of the Interior – National Park Service Pacific Island Support Office	x		x
National Park Service – Kaloko Honokōhau			x
National Park Service – Puuhonua o Honaunau			x
U.S. Department of the Interior – Fish and Wildlife Service	x		x
National Marine Fisheries Service			x
Natural Resources Conservation Service	x		x
Federal Aviation Administration	x		x
B. State Agencies			
Office of the Governor, State of Hawaii			x
Office of Environmental Quality Control	x	x	X (5)
Department of Agriculture			x
Department of Accounting and General Services	x		x
Department of Business, Economic Development & Tourism (DBEDT) – Director’s Office	x		x
DBEDT, Energy, Resources & Technology Division	x		x
DBEDT Planning Office	x		x
Department of Defense	x		x
Department of Education			x
Department of Land and Natural Resources (DLNR) – Aquatic Resources Division	x		x
DLNR, Historic Preservation Division	x	x	x
DLNR, Land Management Division Planning and Technical Services Engineering Branch Hawaii District Land Office	x	x	x
DLNR, Division of Forestry & Wildlife	x		x
DLNR, Commission on Water Resources Management	x	x	x
DLNR, Division of State Parks	x		x
DLNR, Na Ala Hele Program	x		x
DLNR, Division of Boating and Ocean Recreation	x	x	x
Department of Health (DOH)	x		x
DOH, Clean Water Branch	x		x

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

Respondents and Distribution	Received EISNP	Comments Received	Received DEIS
DOH, Environmental Planning Office	x	x	X (2)
Department of Hawaiian Homelands	x		x
Department of Transportation (DOT) Airports Division	x		x
DOT, Highway Division	x	x	x
Office of Hawaiian Affairs (OHA)	x	x	x
OHA, Hilo and Kona Offices	x		x
University of Hawai'i – Environmental Center	x		X (4)
University of Hawaii – Sea Grant	x	x	x
University of Hawaii Water Resources Research Center	x		x
C. County of Hawaii			
Department of Water Supply	x		x
Department of Parks and Recreation	x	x	x
Planning Department	x	x	x
Department of Public Works	x		x
D. Elected Officials			
Senator Lorraine Inouye			x
Senator Russell Kokubun			x
Senator Paul Whalen			x
Representative Robert Herkes			x
Representative Mark Jerrigan			x
Councilman Curtis Tyler			x
E. Media			
Honolulu Advertiser			x
Honolulu Star Bulletin			x
Hawaii Tribune Herald			x
West Hawaii Today			x
F. Public Libraries			
Hōlualoa Public Library			x
Kailua-Kona Public Library			x
Thelma Parker Memorial Public Library			x
Kealahou Public Library			x
Hilo Regional Library			x
Lihue Regional Library			x
Wailuku Regional Library			x
Hawaii Kai Regional Library			x
Kaneohe Regional Library			x
Pearl City Regional Library			x
Kaimuki Regional Library			x
DBEDT Library			x
Hawaii State Library			x
Legislative Reference Bureau			x

KEKAHA KAI STATE PARK

• Draft Environmental Impact Statement •

Respondents and Distribution	Received	Comments	Received
	EISNP	Received	DEIS
UH Mānoa Hamilton Library			X
UH Hilo Library			X
G. Community Organizations, Non-Profit Special Interest Organizations & Individuals			
The Kamehameha Schools / Bishop Estate	X	X	X
Ellison Onizuka Space Museum	X		X
Ka'ūpūlehu Land Company	X		X
Kekaha Kai State Park Task Force	X		X
Kona Hawaiian Civic Club	X		X
West Hawaii Sierra Club	X	X	X
Pulama ia Kona (Kona Historical Society)	X		X
W.B. Kūki'o Resorts, LLC	X		X
W.B. Manini'ōwali, LLC	X		X
Hui Laulima O Kekaha Kai	X		X
Manini'ōwali Equity Company	X		X
Janice Palma – Glennie	X	X	X
Carol Fuller	X	X	X

EIS – PreConsultation Comment and Responses